

# Farm Operations Cost Guide

• Custom Rates Survey Summary • Farm Machinery Cost Guide • Calculating Farm Machinery Costs

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- also visit our online Machinery Cost Calculator at [www.agric.gov.ab.ca/machcost](http://www.agric.gov.ab.ca/machcost)

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# Introduction

Since 1975, the Agricultural Business Management Branch of Alberta Agriculture, Food and Rural Development has annually surveyed custom rates, rental rates and the new cost of farm machinery to provide information to farmers and custom operators.

The first part of this publication presents a summary of custom work and rental rates during 1999. These rates are only intended as a guide. **They are not to be interpreted as the rates you must charge or pay.** The surveys were conducted by Maureen Wenger of the Statistics and Data Unit from February 1999 through December 1999 and summarized by David Thacker, who is associated with the Agricultural Business Management Branch.

The department gratefully acknowledges the contribution of the farmers and custom operators who willingly co-operated by providing information about their custom and rental rates.

Again for 2000, a listing of prices for some common farm inputs is included. These prices are collected throughout the year by Wild Rose Ag Producers (formerly Unifarm) and the Statistics and Data Development Unit of Alberta Agriculture, Food and Rural Development.

Part three of this publication is a farm machinery cost guide, which provides information on the cost of owning and operating farm machinery. Technical information such as current machinery prices, repair rates, performance, capacity, fuel consumption and fuel price are used to calculate fixed and variable costs. The cost calculations are intended to be used as approximate costs based on new machinery prices as of December 1999.

This year, the Years of Life and Salvage Value have been changed to more accurately indicate what was happening in the marketplace. We feel this adjustment will make our calculation more accurate, but we are still using average numbers, so we recommend that you use your specific information and the worksheets or the online Machinery Cost Calculator wherever possible. This work was done by Dann Mattson of the Agricultural Business Management Branch in Olds.

If you require further assistance in using this material, contact an Alberta Agriculture, Food and Rural Development district office or Farm Management Specialist. Locations and telephone numbers for Farm Management Specialists are listed on page 31.

## Other Information Sources

*Know Your Farm Machinery Costs*, Alberta Agriculture, Food and Rural Development, Agdex 825-6, March 1989

*Farm Machinery Custom and Rental Rate Guide, 1998*  
Saskatchewan Agriculture and Food

*Farm Machinery Rental and Custom Rate Guide, 1998*  
Manitoba Agriculture Farm Management

The online Machinery Cost Calculator at:  
<http://www.agric.gov.ab.ca/machcost>

Try the online Machinery Cost Calculator at <http://www.agric.gov.ab.ca/machcost>

# Custom Rates Survey Summary

## Objective

The specific objective of this survey summary is to organize and report 1999 custom rates for certain custom operations on the farm. No effort is made to evaluate the fairness of reported rates. **The goal is to report what is being charged, not what should be charged.** Because many of the surveys were conducted in 1999, higher costs or other market factors may have resulted in higher custom rates by the time of publication.

### Sample size

Sample size is often small, and thus, reported rates should only be used as a general indication of rates being charged for various custom operations in Alberta.

**Custom rates in this publication are not to be interpreted as recommended rates.** Rates charged by individual custom operations should still be evaluated on their own merit.

### Users of custom rates information

Farmers may find custom rates useful as a guide for machinery management, budgeting and financial planning for credit needs. Also, custom rates can be used as a guide in negotiating settlements for work performed for neighbors or others. Lenders, educators, government institutions and others doing budgeting or planning analysis may also find custom rates helpful in their work. Custom operators can use these guides to compare their own rate with the market rate in a certain area.

### Understanding the tables

Custom rates for various operations in Alberta are presented on pages 4 to 18. The tables are itemized under type of:

- Operation surveyed,
- Location where rates apply,
- Most Common Rates charged in 1997,
- Range of Rates charged in 1998, and
- Most Common Rates charged in 1998.

Under the heading **Location**, three regions, south, central and north are identified. When survey reports were insufficient for regional comparisons, the location is identified as Alberta. The map on page 3 outlines the regional boundaries.

Custom rates in 1999 for the various operations are shown as Range-1999 and Most Common-1999. The rates quoted most often by custom operators are under the heading Most Common-1999. Variations in rates from lowest to highest are under the heading Range-1998. The reason for these ranges is due to many factors, some of which are listed below.

### Factors contributing to lower rates:

- neighborly work exchange
- location of job in relation to home base of custom operator
- custom operator's desire to cover variable costs but not necessarily all fixed costs
- use of older equipment that does not reflect current investment cost and/or has a lower capacity
- services such as labor, meals, fuel, supervision, transportation or other convenience services being provided to the custom operator by the farmer
- the size of job

### Factors contributing to higher rates:

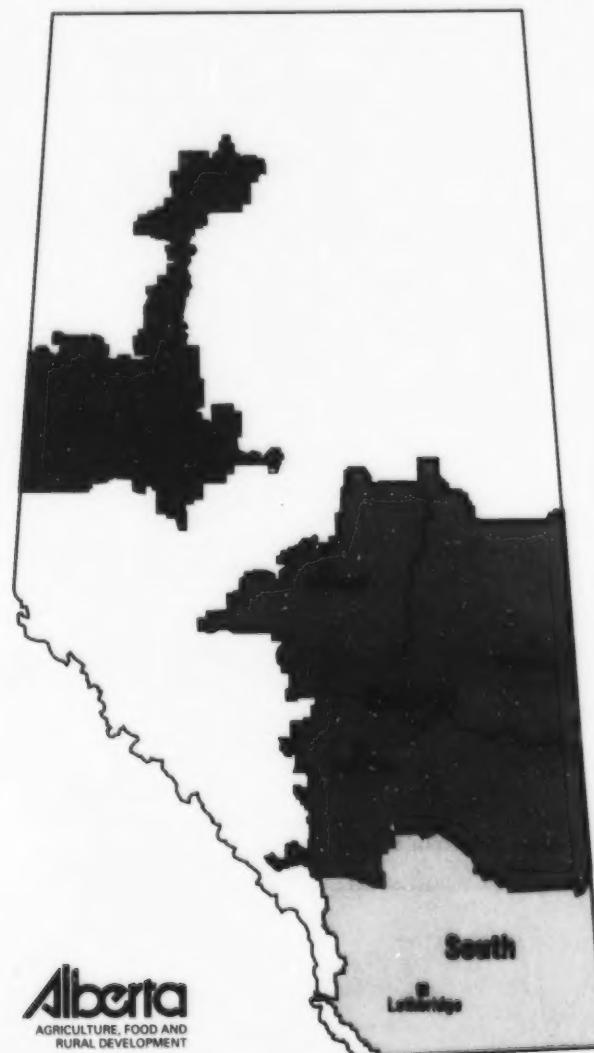
- full-time custom operators who are covering all costs
- charging what the market will bear
- tough jobs requiring extra power, repairs, fuel or time
- field conditions such as rocks, rough terrain, obstructions or high yield crops
- small size jobs
- higher capacity machines

## How to use custom rates information

Rates quoted in this publication for the various custom operations are expressed in numerous ways (per hour, ton, tonne, bale, acres, etc.). Before comparing the various custom operations, always choose the appropriate basis on which to compare. For example, grain harvesting may require a per acre cost as compared to corral cleaning where a per hour rate is more appropriate. When custom rates are given in dollars per hour, it is advisable to convert to a physical unit cost (bushels, tonnes, acres) appropriate

to that operation. A low cost per hour can be a very high cost per acre, tonne, etc.

Because custom rates quoted in this publication may not suit all custom operators and those hiring custom work, you should calculate your own custom costs. For more information on how to calculate your own cost, consult Sections Two and Three of this book or use the online Machinery Cost Calculator at <http://www.agric.gov.ab.ca/machcost>.



Operation	Location	Most Common 1998	Range 1999	Most Common 1999
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## Tillage

<b>Plowing – crop and stubble</b> (also see "land clearing and breaking" on page 11)	Alberta	\$10/ac *	\$8/ac *	\$8/ac *
– <b>hay and pasture</b>	Alberta	\$12 - 25/ac	\$10 - 24/ac \$95 - 125/hr	\$10 - 24/ac \$95 - 125/hr
<b>Total reports 6; Surveyed November 1999</b>				
<b>Discing – crop and stubble</b>	Alberta	\$5 - 8/ac \$60/hr - 70/hr	\$5 - 30/ac \$110/hr *	\$5 - 7.50/ac \$110/hr *
– <b>hay and pasture</b>	Alberta	\$10 - 12/ac \$70 - 110/hr	\$9 - 30/ac \$60 - 145/hr	\$10 - 17/ac \$75 - 110/hr
<b>Total reports 27; Surveyed November 1999</b>				
<b>Rototilling – hay and pasture</b>	Alberta	\$83 - 120/hr	\$90 - 220/hr	\$90 - 120/hr
		\$78 - 82/hr *	\$78 - 82/hr *	\$78 - 82/hr *
<b>Total reports 7; Surveyed November 1999</b>				
<b>Cultivating</b>	Alberta	\$4.50 - 6.00/ac \$70/hr	\$5 - 8/ac \$45 - 85/hr	\$6/ac \$50 - 85/hr
<b>Total reports 15; Surveyed November 1999</b>				
<b>Harrowing</b>	Alberta	—	\$3 - 3.50/ac \$50 - 75/hr	\$3 - 3.50/ac \$50 - 75/hr
<b>Total reports 4; Surveyed November 1999</b>				
<b>Harrowing and packing</b>	Alberta	\$2.20 - 4.50/ac	\$2.50/ac	\$2.50/ac
<b>Total reports 2; Surveyed November 1999</b>				

See cost calculations page 24 and 25

## Seeding

<b>Seeding – air seeder/airdrill</b>	South	\$7 - 10/ac	\$6 - 20/ac	\$8 - 15/ac
	Central	\$7 - 10/ac	\$7 - 16/ac	\$8 - 15/ac
	North	\$7 - 10/ac	\$7.50 - 15.00/ac	\$7.50 - 15.00/ac

Note: higher costs for direct seeding versus conventional seeding

Total reports 84; Surveyed June & November 1999

These are survey results only – not recommended rates.

NOTE: \* Indicates one report received.

Operation	Location	Most Common 1998	Range 1999	Most Common 1999
<b>Seeding - press drill/hoe drill</b>	Alberta	\$5 - 7/ac	\$4 - 13/ac	\$6 - 12/ac
Note: higher costs when granular fertilizer applied with seeding operation				
Total reports 18; Surveyed June & November 1999				
<b>Seeding - floater truck</b>	South	\$4 - 5/ac	\$4 - 6/ac	\$4.00 - 4.50/ac
	Central	\$4 - 5/ac	\$3.50 - 7.00/ac	\$4 - 6/ac
	North	\$4 - 5/ac	\$4.00 - 4.50/ac	\$4.00 - 4.50/ac
Total reports 94; Surveyed June & November 1999				
<b>Seeding - serial</b>				
Highest rates for heavier seeding rates	Alberta	\$4.25 - 6.00/ac	\$4.50 - 5.00/ac	\$5/ac
Total reports 11; Surveyed June & November 1999				
<b>Seeding - no-till drill</b>	Alberta	\$10 - 15/ac	\$10 - 16/ac	\$12 - 15/ac
Total reports 8; Surveyed June & November 1999				
See cost calucations page 25				

## Fertilizer Application

<b>Liquid or granular fertilizer application</b>	South	\$4.00 - 4.50/ac	\$3.25 - 5.50/ac	\$3.75 - 4.50/ac
Floater truck	Central	\$4.00 - 4.50/ac	\$3.50 - 5.50/ac	\$3.75 - 4.50/ac
	North	\$3.50 - 4.00/ac	\$3.50 - 4.50/ac	\$4.00 - 4.50/ac
Total reports 181; Surveyed June & November 1999				
<b>Granular fertilizer application</b>				
Fixed-wing aerial	Alberta	\$5.00 - 5.50/ac	\$5/ac	\$5/ac
Total reports 5; Surveyed June & November 1999				
<b>Granular fertilizer application</b>				
Truck mount	Alberta	\$3.00 - 3.50/ac	\$2.50 - 5.00/ac	\$2.50 - 5.00/ac
Total reports 5; Surveyed June & November 1999				
<b>Anhydrous fertilizer application</b>				
Cultivator with cold flow kit	Alberta	\$5 - 10/ac	\$5.50 - 10.00/ac	\$6.50 - 9.50/ac
Total reports 12; Surveyed June & November 1999				

These are survey results only - not recommended rates.

NOTE: \* Indicates one report received.

Operation	Location	Most Common 1998	Range 1999	Most Common 1999
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## Herbicide Application

### Granular herbicide application

Floater truck	Alberta	\$4.00 - 4.75/ac	\$3.50 - 5.50/ac	\$4 - 5/ac
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Total reports 59; Surveyed June & November 1999

### Liquid or granular herbicide application

Truck mount	Alberta	\$2 - 4/ac	\$2.25 - 4.00/ac	\$2.50 - 4.00/ac
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Total reports 14; Surveyed June & November 1999

### Liquid herbicide application

High clearance	South	\$4 - 6/ac	\$3.50 - 8.00/ac	\$4 - 6/ac
	Central	\$4 - 5/ac	\$3.25 - 7.00/ac	\$4.00 - 5.50/ac
	North	\$4 - 5/ac	\$4 - 5/ac	\$4 - 5/ac

Total reports 213; Surveyed June & November 1999

### Liquid herbicide application

Fixed-wing aerial (highest rates for more water used)	South	\$4 - 6/ac	\$3.75 - 7.50/ac	\$4.00 - 5.50/ac
	Central	\$4 - 6/ac	\$4.00 - 6.50/ac	\$4.50 - 6.00/ac
	North	\$4 - 6/ac	\$4.00 - 5.50/ac	\$4.00 - 5.50/ac

Total reports 92; Surveyed June & November 1999

See cost calculation spraying page 25

## Grain Harvesting

Swathing	Alberta	\$5 - 8/ac	\$4.50 - 12.00/ac	\$6.50 - 10.00/ac
		\$50 - 70/hr	\$45 - 75/hr	\$55 - 75/hr

Total reports 51; Surveyed November – December 1999

### Combining – straight cut header and pickup header

South – Dryland	\$12 - 17/ac	\$12 - 18/ac	\$16 - 18/ac
	\$140/hr *	\$125 - 140/hr	\$125 - 140/hr
South – Irrigated	\$22 - 25/ac	\$18 - 25/ac	\$18 - 25/ac
Central	\$12 - 17/ac	\$13 - 23/ac	\$14 - 18/ac
	\$85 - 145/hr	\$65 - 150/hr	\$100 - 130/hr
North	\$100 - 150/hr	—	—

Total reports 41; Surveyed November – December 1999

See cost calculations: swathing page 26 and combining page 28

These are survey results only – not recommended rates.

NOTE: \* Indicates one report received.

Operation	Location	Most Common 1998	Range 1999	Most Common 1999
Combining and hauling to bin	South	\$16 - 24/ac \$125/hr *	\$16 - 25/ac —	\$17 - 20/ac —
	Central	\$14 - 20/ac \$120 - 165/hr	\$13 - 25/ac \$100 - 200/hr	\$17 - 21/ac \$120 - 170/hr
	North	\$15/ac * \$100/hr *	\$15/ac * \$100/hr *	\$15/ac * \$100/hr *
Total reports 55; Surveyed November – December 1999				
Grain drying	Alberta	\$40 - 70/hr \$0.10 - 0.30/bu	\$40 - 70/hr \$0.10 - 0.25/bu	\$40 - 70/hr \$0.10 - 0.25/bu
Total reports 11; Surveyed November – December 1999				

See cost calculation for grain drying page 29

## Grain Hauling

Less than 20 miles	Alberta	\$4 - 6/T \$0.10 - 0.15/bu \$50 - 200/load	\$3.50 - 6.50/T \$20 - 80/hr \$50/load	\$4 - 6/T \$30 - 45/hr \$50/load
Total reports 62; Surveyed November – December 1999				
21 to 50 miles	Alberta	\$5 - 7/T \$0.14 - 0.25/bu \$2.50/lmi *	\$4.50 - 8.00/T \$55/hr —	\$5 - 7/T \$55/hr —
Total reports 56; Surveyed November – December 1999				
51 to 100 miles	Alberta	\$7 - 11/T \$0.20 - 0.25/bu \$3.00 - 3.25/lmi	\$5.75 - 11.50/T \$1.75 - 2.00/rmi * \$3/lmi *	\$7 - 10/T \$1.75 - 2.00/rmi * \$3/lmi *
Total reports 52; Surveyed November – December 1999				
101 to 200 miles	Alberta	\$9 - 15/T \$2.25 - 3.25/lmi \$1.50/rmi *	\$9 - 16/T — \$1.75/rmi - 2.00/rmi *	\$9 - 16/T — \$1.75/rmi - 2.00/rmi *
Total reports 23; Surveyed November – December 1999				
Over 200 miles	Alberta	\$16 - 28/T \$2.70 - 3.00/lmi \$1.35 - 1.60/rmi	\$14 - 35/T — \$1.35 - 1.60/rmi	\$16 - 28/T — \$1.35 - 1.60/rmi
Total reports 11; Surveyed November – December 1999				

See cost calculations for trucking on page 29

These are survey results only – not recommended rates.

NOTE: \* Indicates one report received.

Operation	Location	Most Common 1998	Range 1999	Most Common 1999
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## Haying

<b>Cutting and conditioning hay – mower conditioner</b>	South	\$10 - 12/ac	\$10 - 16/ac	\$10 - 15/ac
	Central	\$8 - 12/ac \$50 - 70/hr	\$8 - 15/ac \$45 - 105/hr	\$10 - 12/ac \$50 - 70/hr
	North	\$7 - 8/ac \$60/hr *	\$7 - 8/ac *	\$7 - 8/ac *

Total reports 44; Surveyed November – December 1999

<b>Baling – small square</b>	Alberta	\$0.35 - 0.45/bale	\$0.27 - 0.85/bale	\$0.40 - 0.45/bale
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Total reports 15; Surveyed November – December 1999

<b>Stacking and hauling small square</b>	Alberta	\$0.30 - 0.40/bale	\$0.30 - 0.50/bale	\$0.30 - 0.40/bale
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Total reports 16; Surveyed November – December 1999

<b>Baling, stacking and hauling small square</b>	Alberta	\$0.60 - 1.00/bale	\$0.72 - 1.00/bale	\$0.75 - 0.85/bale
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Total reports 13; Surveyed November – December 1999

<b>Cutting, baling, stacking and hauling small square</b>	Alberta	\$1.25/bale - 1.35/bale	\$1.50/bale *	\$1.50/bale *
Total reports 1; Surveyed November – December 1999				

<b>Baling – medium square</b>	Alberta	\$5.00 - 8.50/bale	\$6 - 7/bale	\$6 - 7/bale
<b>– large square</b>		\$10 - 12/bale	\$8 - 12/bale	\$10 - 12/bale

Total reports ; Surveyed November – December 1999

<b>Baling – small round</b>	Alberta	\$4.00 - 5.50/bale	—	—
<b>– medium round</b>		\$5.00 - 6.50/bale	\$5.00 - 7.50/bale	\$5.00 - 7.50/bale

Total reports 4; Surveyed November – December 1999

<b>Baling – large round</b>	South	\$6.50 - 7.00/bale	\$6 - 10/bale	\$7 - 8/bale
	Central	\$6.00 - 7.50/bale	\$4 - 9/bale	\$5 - 8/bale
	North	\$5.00 - 7.50/bale	\$5 - 7/bale	\$5 - 7/bale

Total reports 80; Surveyed November – December 1999

See cost calculations page 27

These are survey results only – not recommended rates.

NOTE: \* Indicates one report received.

Operation	Location	Most Common 1998	Range 1999	Most Common 1999
<b>Stacking and hauling large round</b>				
Less than 5 miles	Alberta	\$1.50 - 3.00/bale	\$1.50 - 3.50/bale \$60/hr *	\$1.75 - 2.75/bale \$60/hr *
<hr/> Total reports 27; Surveyed November – December 1999				
<b>Baling, stacking and hauling large round</b>				
Less than 5 miles	Alberta	\$8.50 - 10.50/bale	\$8.15 - 10.00/bale	\$8.50 - 10.00/bale
<hr/> Total reports 9; Surveyed November – December 1999				
<b>Hay hauling – large round</b>				
Up to 18 bales per load	0 - 10 miles	\$3 - 4/bale	\$1.50 - 4.00/bale	\$2 - 4/bale
	11 - 25 miles	\$4.50 - 6.50/bale	\$4.50 - 5.50/bale	\$4.50 - 5.50/bale
	26 to 60 miles	\$6.00 - 8.50/bale \$70/hr *	\$5.50 - 6.00/bale \$50 - 60/hr *	\$5.50 - 6/bale \$50 - 60/hr *
<hr/> Total reports 12; Surveyed November – December 1999				
<b>Hay hauling – large round</b>				
30 or more bales per load	0 - 10 miles	\$5/bale	\$3 - 6/bale \$55 - 75/hr	\$3 - 5/bale \$55 - 75/hr
	11-25 miles	\$5.00 - 6.50/bale \$60 - 80/hr	\$3.50 - 6.00/bale \$55 - 75/hr	\$3.75 - 5.00/bale \$55 - 75/hr
	26 to 60 miles	\$7.00 - \$8.50/bale \$210 - 300/load	\$3.25 - 8.00/bale \$216 - 320/load	\$4.50 - 7.00/bale \$216 - 320/load
	Over 60 miles	\$3.00 - 3.25/lmi	\$2.75 - 3.50/lmi	\$2.75 - 3.50/lmi
<hr/> Total reports 64; Surveyed November – December 1999				

## Silage

<b>Cutting silage – swathing</b>		\$1.00 - 1.50/Ton	\$0.75 - 1.50/Ton	\$1/Ton
4 - 12 ac/hr	Alberta	\$55 - 60/hr \$8 - 10/ac	\$45 - 75/hr \$5.50 - 11.00/ac	\$55 - 60/hr \$8 - 10/ac
<hr/> Total reports 28; Surveyed November – December 1999				
<b>Chopping silage</b>	Alberta	\$135 - 200/hr	\$125 - 250/hr	\$135 - 225/hr
20 - 55T/hr		\$4 - 5/Ton \$18.50 - 24.00/load	\$4 - 5/Ton \$21 - 24/load	\$4 - 5/Ton \$21 - 24/load
<hr/> Total reports 16; Surveyed November – December 1999				

These are survey results only – not recommended rates.  
NOTE: \* Indicates one report received.

Operation	Location	Most Common 1998	Range 1998	Most Common 1999
<b>Hauling silage</b>				
Truck and operator, 1 - 5 miles haul	Alberta	\$35 - 50/hr \$1.10 - 3.00/Ton \$1.00 - 2.50/Tonne \$7 - 42/load	\$35 - 70/hr — \$1/Tonne* —	\$40 - 50/hr — \$1/Tonne* —
Total reports 25; Surveyed November – December 1999				
<b>Packing silage</b>				
Tractor with dozer, loader, or packer, 25 to 60 tons/hr	Alberta	\$45 - 65/hr \$4 - 10/load \$1.10 - 2.00/Ton	\$30 - 80/hr \$4 - 10/load \$0.75 - 2.00/Ton	\$45 - 60/hr \$4 - 10/load \$0.75 - 2.00/Ton
Total reports 22; Surveyed November – December 1999				
<b>Chopping and hauling silage</b>				
1 - 5 mile haul	Alberta	\$180 - 250/hr \$5.50 - 6.50/Ton \$31 - 38/load	\$145 - 470/hr \$5 - 9/Ton \$30 - 38/load	\$180 - 325/hr \$5.25 - 6.50/Ton \$30 - 38/load
Total reports 43; Surveyed November – December 1999				
<b>Swathing, chopping and hauling silage</b>				
	Alberta	\$6.50 - 8.00/Ton \$285/hr *	\$6.50 - 7.25/Ton \$6.00 - 8.25/Tonne	\$6.50 - 7.25/Ton \$6.00 - 8.25/Tonne
Total reports 7; Surveyed November – December 1999				
<b>Swathing, chopping, hauling and packing</b>				
	Alberta	\$8 - 10/Ton \$7/Tonne *	— \$7/Tonne *	— \$7/Tonne *
Total reports 1; Surveyed November – December 1999				
<b>Silage bagging</b>				
includes bag (customer provides (tractor)	Alberta	Bag Size 10 x 150 Bag Size 10 x 200 Bag Size 10 x 250	\$1,450 - 1,500/bag \$1,850 - 1,900/bag \$2,375 - 2,450/bag	\$1,400 - 1,500/bag \$1,600 - 1,925/bag \$2,400/bag *
Total reports 12; Surveyed November – December 1999				
<b>Silage chopping, hauling and bagging</b>				
includes bag (customer may be required to provide tractor)	Alberta	Bag Size 10 x 150 Bag Size 10 x 200 Bag Size 10 x 250	\$2,500 - 2,900/bag \$3,200 - 3,750/bag \$4,000 - 4,800/bag	\$2,600 - 3,000/bag \$3,250 - 3,900/bag \$4,250 - 5,500/bag
Total reports 16; Surveyed November – December 1999				

See cost calucations on forage harvesting page 26

These are survey results only – not recommended rates.

NOTE: \* Indicates one report received.

NOTE: Ton is an imperial ton. Tonne is a metric tonne.

## Land Clearing and Breaking

<b>Brushing and piling or repiling (with dozer blade)</b>	Alberta			
D6 (140 - 180 hp)	\$80 - 85/hr	\$80 - 95/hr	\$85/hr	
D7 (180 - 200 hp)	\$90 - 95/hr	\$70 - 110/hr	\$90 - 105/hr	
D8 (225 - 335 hp)	\$100 - 130/hr	\$80 - 200/hr	\$100 - 150/hr	
<b>Total reports 41; Surveyed November 1999</b>				
<b>Ripping or sub-soiling</b>	Alberta	\$95 - 135/hr \$22/ac *	\$95 - 145/hr —	\$105 - 135/hr —
<b>Total reports 9; Surveyed November 1999</b>				
<b>Root raking</b>	Alberta	\$75 - 125/hr	—	—
<b>Total reports 0; Surveyed November 1999</b>				
<b>Rock picking</b>	Alberta	\$125/hr *	\$125/hr *	\$125/hr *
<b>Total reports 1; Surveyed November 1999</b>				
<b>Discing</b> Higher rates for remote locations or rough terrain	Alberta	\$10/ac \$85 - 100/hr	\$15 - 30/ac \$70 - 145/hr	\$25 - 30/ac \$75 - 110/hr
<b>Total reports 15; Surveyed November 1999</b>				
<b>Plowing</b> See tillage section, page 4, for crop or hay and pasture plowing	Alberta	\$50 - 65/ac \$65 - 120/hr	\$50 - 60/ac \$85 - 125/hr	\$50 - 60/ac \$85 - 125/hr
<b>Total reports 6; Surveyed November 1999</b>				
<b>Rototilling</b>	Alberta	\$90 - 220/hr	\$86 - 220/hr	\$86 - 220/hr
<b>Total reports 3; Surveyed November 1999</b>				
<b>Dugout construction, drainage, land leveling</b>	Alberta			
D6 Cat	—	\$85 - 95/hr	\$85 - 95/hr	
D7 Cat	—	\$70 - 110/hr	\$75 - 105/hr	
D8 Cat	—	\$80 - 140/hr	\$100 - 125/hr	
Excavators, Scrapers and others	—	\$40 - 200/hr	\$75 - 135/hr	
<b>Total reports 63; Surveyed November 1999</b>				

These are survey results only – not recommended rates.

NOTE: \* Indicates one report received.

## Machinery Rental

<b>Anhydrous ammonia applicator – pull-type</b> (rental cost with product purchase)	Alberta	\$1.25 - 2.50/ac	\$1 - 4/ac	\$1 - 4/ac
	Delivery extra	—	\$20 - 40/Tonne	\$20 - 40/Tonne
	Delivery included	—	\$60 - 90/Tonne	\$60 - 90/Tonne

Total reports 11; Surveyed June & November 1999

<b>Liquid fertilizer applicator – pull-type</b> (rental cost with product purchase)	Alberta	\$1.00 - 2.00/ac	\$1.00 - 2.50/ac	\$1.50 - 2.00/ac
	—	—	\$200/day *	\$200/day *

Total reports 17; Surveyed June & November 1999

<b>Granular fertilizer applicator – pull-type</b> (rental cost with product purchase)	South	N/C - \$1/ac	N/C - \$1/ac	N/C - \$1/ac
	—	\$5 - 8/T	\$5 - 10/T	\$5 - 6/T
	Central	N/C - \$1/ac	N/C - \$3.25/ac	N/C - \$1.50/ac
	—	\$7 - 9/T	\$3 - 20/T	\$5 - 10/T
	—	\$25 - 50/day	\$20 - 100/day	\$20 - 50/day
	North	N/C - \$50/day	N/C - \$50/day	N/C - \$50/day

Total reports 76; Surveyed June & November 1999

<b>Granular herbicide applicator – pull-type</b> (rental cost with product purchase)	Alberta	\$1.00 - 2.50/ac	\$0.50 - 3.75/ac	\$0.50 - 2.50/ac
	—	\$50/day	\$50 - 100/day	\$50/day

Total reports 35; Surveyed June & November 1999

## Soil Testing

### Soil testing

(lab fees included)	Alberta			
	Four nutrients	\$30 - 45/field	\$25 - 100/field	\$25 - 50/field
	With micronutrients	\$45 - 65/field	\$45 - 140/field	\$45 - 80/field

Total reports 143; Surveyed June & November 1999

These are survey results only – not recommended rates.

NOTE: \* Indicates one report received.

Operation	Location	Most Common 1998	Range 1999	Most Common 1999
<b>Grain Processing</b>				
<b>Grinding</b> (mixing cost included)	Alberta	\$14 - 20/T	\$12 - 25/T	\$15 - 20/T
Total reports 16; Surveyed November – December 1999				
<b>Dry rolling</b> (mixing cost included)	Alberta	\$12 - 20/T	\$12 - 25/T	\$12 - 20/T
Total reports 17; Surveyed November – December 1999				
<b>Steam rolling</b> (mixing cost included)	Alberta	\$15 - 30/T	\$15 - 30/T	\$15 - 30/T
Total reports 6; Surveyed November – December 1999				
<b>Pelleting</b> (mixing cost included)	Alberta	\$27 - 40/T	\$27 - 40/T	\$27/T
Total reports 4; Surveyed November – December 1999				
<b>Processed grain delivery –</b>				
7 to 13 tonne load				
	Alberta	\$6.50/T *	\$5 - 10/T	\$6.50 - 7.50/T
		\$40 - 50/load	—	—
0 to 35 miles				
		\$50/hr *	\$50/hr *	\$50/hr *
Total reports 10; Surveyed November – December 1999				

These are survey results only – not recommended rates.  
 NOTE: \* indicates one report received.

# Livestock Feeding

## Feeding and backgrounding calves

	Alberta		
Yardage	\$0.15 - 0.18/day	\$0.11 - 0.18/day	\$0.15 - 0.18/day
Bedding charge	\$16 - 30/lb bale	\$14 - 30/lb bale	\$18 - 30/lb bale
	\$0.05 - 0.09/hd/day	\$0.05 - 0.10/hd/day	\$0.05 - 0.09/hd/day
Death loss	1 - 2%	0.5 - 2.0%	0.5 - 1.5%
Total cost/lb gain **	\$0.60 - 0.75/lb	\$0.55 - 0.78/lb	\$0.60 - 0.75/lb

Total reports 28; Surveyed January 1999

## Finishing calves

	Alberta		
Yardage	\$0.12 - 0.18/day	\$0.11 - 0.20/day	\$0.14 - 0.18/day
Bedding charge	\$16 - 21/lb bale	\$17 - 35/lb bale	\$18 - 24/lb bale
	\$0.05 - 0.06/hd/day	\$0.01 - 0.10/hd/day	\$0.05/hd/day
Death loss	0.70 - 1.50%	0.25 - 2.5%	0.05 - 1.5%
Total cost/lb gain **	\$0.60 - 0.70/lb	\$0.55 - 0.80/lb	\$0.60 - 0.68/lb

Total reports 31; Surveyed January 1999

## Finishing yearlings

	Alberta		
Yardage	\$0.12 - 0.16/day	\$0.11 - 0.18/day	\$0.14 - 0.18/day
Bedding charge	\$14 - 20/lb bale	\$13 - 35/lb bale	\$13 - 24/lb bale
	\$0.03 - 0.06/hd/day	\$0.01 - 0.10/hd/day	\$0.05 - 0.06/hd/day
Death loss	0.25 - 0.50%	0.25 - 1.00%	0.25 - 1.00%
Total cost/lb gain **	\$0.60 - 0.70/lb	\$0.50 - 0.71/lb	\$0.55 - 0.65/lb

Total reports 29; Surveyed January 1999

## Overwintering Cows

	Total cost/day		
	\$1.25 - 1.50/day	\$0.60 - 1.55/day	\$1.25 - 1.50/day

Total reports 8; Surveyed January 1999

Jan. 2000 data will be available in the "Custom Rates Survey Livestock Operations" in March 2000

These are survey results only - not recommended rates.

NOTE: \* Indicates one report received.

NOTE: \*\* Does not include interest.

NOTE: Ton is an imperial ton; Tonne is a metric tonne.

## Livestock Hauling

### Possum belly liner

50,000 - 65,000 lb)

lmi = loaded mile

Alberta	0 - 20 mi	\$150 - 200/load	\$100 - 300/load	\$140 - 200/load
		\$60 - 85/hr	\$60 - 95/hr	\$60 - 95/hr
	21 - 50 mi	\$200 - 265/load	\$150 - 325/load	\$175 - 295/load
		\$3.00 - 3.50/lmi *	\$3.25 - 4.00/lmi	\$3.25 - 4.00/lmi
	51 - 100 mi	\$300 - 450/load	\$260 - 445/load	\$300 - 445/load
		\$3.25 - 4.00/lmi	\$3.00 - 4.00/lmi	\$3.00 - 4.00/lmi
		\$70 - 75/hr	—	—
	100 + mi	\$2.60 - 3.50/lmi	\$2.60 - 4.00/lmi	\$2.60 - 3.50/lmi
		\$1.00 - 1.25/cwt	\$0.80 - 1.65/cwt	\$1.25 - 1.65/cwt
		\$380 - 550/load	\$380 - 550/load	\$380 - 550/load

Total reports 106; Surveyed November - December 1999

### Straight liner, body job and gooseneck

(16,000 - 42,000 lb)

lmi = loaded mile

Alberta	\$150 - 300/load	\$300/load *	\$300/load *
	\$2.25 - 3.50/lmi	\$2.40 - 2.60/lmi	\$2.40 - 2.60/lmi
	\$1.40 - 1.50/cwt	\$1.40/cwt	\$1.40/cwt
	\$30 - 65/hr	\$50 - 55/hr	\$50 - 55/hr

Total reports 10; Surveyed November - December 1999

### Other livestock (horses, sheep, etc.)

Alberta			
Hogs	\$2.65/hog	\$2.65/hog *	\$2.65/hog *
	\$1.60/cwt *	\$1.60/cwt *	\$1.60/cwt *
Sows/Boar	\$6/sow or boar	—	—

Total reports 3; Surveyed November - December 1999

These are survey results only - not recommended rates.  
NOTE: \* Indicates one report received.

Operation	Location	Most Common 1998	Range 1999	Most Common 1999
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## Corral Cleaning

Corral cleaning	Alberta		
Loader, 4 Spreaders, 5 Operators		\$260 - 315/hr	\$250 - 350/hr
Loader, 3 Spreaders, 4 Operators		\$180 - 230/hr	\$180 - 255/hr
Loader, 2 Spreaders, 3 Operators		\$160 - 190/hr	\$135 - 185/hr
Loader, 1 Spreader, 1 Operator		\$65 - 90/hr	\$65 - 86/hr
Loader only, 1 Operator		\$45 - 85/hr	\$40 - 85/hr
Total reports 106; Surveyed November – December 1999			\$45 - 75/hr

## Fencing

Barbed wire fence construction	Alberta	\$1,000 - 1,800/mi	\$1,000 - 2,000/mi	\$1,200 - 1,800/mi
		\$60 - 70/hr	\$40 - 100/hr	\$65 - 80/hr
		\$2/metre *	\$1.50 - 1.80/metre	\$1.50 - 1.80/metre
Labor and equipment		\$0.75 - 1.50/ft	\$1,000 - 1,500/km *	\$1,000 - 1,500/km *
Total reports 36; Surveyed November – December 1999				

### High tensile wire fence construction

Includes labor, some material and equipment	Alberta	—	\$70/hr *	\$70/hr *
		\$0.38/ft *	\$0.30/ft *	\$0.30/ft *

Total reports 2; Surveyed November – December 1999

### Post pounding

Labor and equipment	Alberta	\$60 - 75/hr	\$40 - 115/hr	\$65 - 100/hr
Total reports 22; Surveyed November – December 1999				

### Barbed wire fence removal

Labor and equipment	Alberta	\$500 - 600/mi	\$500 - 750/mi	\$500 - 750/mi
		\$60 - 75/hr	\$40 - 100/hr	\$65 - 100/hr

Total reports 20; Surveyed November – December 1999

These are survey results only – not recommended rates.  
NOTE: \* Indicates one report received.

# Land Leasing

Cash rent	cropland	Location	Average 1998	Range 1999	Most Common 1999	Average 1999
		South - Irrigated	\$77.48/ac	\$25 - 200/ac	\$42 -100/ac	\$84.00/ac
		South - Dryland	\$25.79/ac	\$8.63 - 40/ac	\$15.00 - 32.50/ac	\$24.71/ac
		Central	\$28.97/ac	\$9.38 - 58.33/ac	\$20 - 40/ac	\$28.39/ac
		North	\$14.97/ac	\$8.38 - 22/ac	\$17 - 20/ac	\$16.46/ac

Total reports 113; Surveyed March 1999

Length of lease	cropland	Cash rent	Crop share	
1		34	30	41
2		3	3	6
3		27	24	22
4		7	6	0
5		33	29	13
6+		9	8	18
Total		113	100	100

Total reports 176; Surveyed March 1999

Type of lease	cropland	Cash rent	Crop share	
South		26	58	42
Central		73	70	30
North		14	54	46

Total reports 176; Surveyed March 1999

These are survey results only – not recommended rates.

Crop share rental - cropland	Landlord	Tenant	No. of leases	Reporting	Notes
<b>Alberta</b>					
South	1/4 : 3/4	0	0	Tenant pays all but taxes	
	1/3 : 2/3	17	90	in 11 of 19 agreements	
	1/5 : 4/5	1	5		
	2/5 : 3/5	1	5		
	1/2 : 1/2	0	0		
Central	1/5 : 4/5	4	13	Tenant pays all but taxes	
	1/4 : 3/4	2	6	in 12 of 32 agreements	
	1/3 : 2/3	22	69		
	2/5 : 3/5	3	9		
	1/2 : 1/2	1	3		
North	1/5 : 4/5	2	17	Tenant pays all but taxes	
	1/4 : 3/4	7	58	in 8 of 12 agreements	
	1/3 : 2/3	3	25		
	2/5 : 3/5	0	0		

**Total Reports 63; Surveyed March 1999**

Cash rent - private pasture	Location	Most Common 1998	Range 1999	Most common 1999
	South	\$15 - 18/AUM \$20/hd/month *	\$7.50 - 20.00/AUM \$15/ac *	\$18 - 20/AUM \$15/ac *
	Central	\$12 - 15/AUM \$12 - 16/hd/mo	\$8 - 21/AUM \$12 - 15/hd/mo	\$10 - 15/AUM \$12 - 15/hd/mo
	North	\$10/ac *	—	—

**Total Reports 37; Surveyed March 1999**

Crownland	Location	Total Acreage	Rate AUM 1998	Rate AUM 1999
	South	3,100,000	\$2.79	\$2.79
	Central	800,000	\$2.32	\$2.32
	North	1,700,000	\$1.39	\$1.39

**Surveyed March 1999**

These are survey results only - not recommended rates.  
NOTE: \* indicates one report received.

# Alberta Average Farm Input Prices

## Agricultural Input Prices

The following average prices are based on prices quoted the first week of each month at 18 centres across Alberta. These prices are intended as a guide only. Actual current prices may differ.

Items	Average 1997	Average 1998	December 1999
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### Building Supplies

Lumber 2 x 6 spruce, M	\$ 722.88	\$ 650.38	\$ 620.59
Sheathing, plywood, spruce, 3/8", 4' x 8' sht	\$ 15.33	\$ 14.95	\$ 16.87
Cement, 40 kg	\$ 8.61	\$ 8.72	\$ 8.84
Barn paint, oil base, 20 litres	\$ 69.11	\$ 68.68	\$ 70.68
Pipe, plastic, 3/4", 75 psi, 100' coil	\$ 25.38	\$ 24.50	\$ 24.15
Rods, re-enforcing 1/2", 6 metres	\$ 4.20	\$ 4.24	\$ 4.12
Barbed wire, 12 gauge, double strand	\$ 41.82	\$ 41.97	\$ 42.42

### Machinery Repairs

Truck tires, 1st line, P235-75R-15, each	\$ 117.35	\$ 117.91	\$ 120.17
Battery, 525 cranking amp, each	\$ 74.03	\$ 74.70	\$ 75.46
V-belt, 1/2" x 70", ea.	\$ 9.36	\$ 10.04	\$ 10.24
Antifreeze, 4 litres	\$ 8.40	\$ 9.20	\$ 8.72
Mechanical repairs, per hour	\$ 49.54	\$ 52.64	\$ 54.02

### Crop Supplies

Baler twine, sisal 9000 ft	\$ 33.75	\$ 33.61	\$ 34.54
Fertilizer, 46-0-0, tonne, bulk	\$ 339.84	\$ 286.77	\$ 271.82
Fertilizer, 11-51-0, tonne, bulk	\$ 434.39	\$ 415.90	\$ 411.96
Fertilizer, 82-0-0, tonne, bulk (Applicator Inc.)	\$ 533.87	\$ 499.21	\$ 434.51
2-4-D Low Volatile, 20 litres	\$ 96.97	\$ 100.52	\$ 105.30
Avadex BW, Liquid, 5 gallon	\$ 200.99	\$ 202.38	\$ 199.01
Trifluralin, Treflan, 17 litre case	\$ 231.23	\$ 236.66	\$ 240.64
Seed; wheat, 100 kg, bulk	\$ 29.59	\$ 28.89	\$ 27.56
Seed; barley, 100 kg, bulk	\$ 30.46	\$ 29.66	\$ 27.22
Seed, canola, treated, 100 kg, bagged	\$ 308.73	\$ 306.22	\$ 370.20

## Feeds

Calf Starter Supplement, (20-24%), 25 kg	\$ 10.36	\$ 10.64	\$ 10.05
Dairy Supplement, (32%), 25 kg	\$ 11.79	\$ 11.85	\$ 11.10
Hog Supplement, (40%), 25 kg	\$ 13.97	\$ 13.67	\$ 12.45
Broiler grower, (18-20%), 25 kg	\$ 9.43	\$ 9.81	\$ 9.57
Cattle mineral, 25 kg	\$ 18.59	\$ 19.23	\$ 19.43
Feed barley, No. 1, (Farm Gate), bu	\$ 2.38	\$ 2.27	\$ 2.10
Feed wheat, No. 1, (Farm Gate), bu	\$ 3.08	\$ 2.96	\$ 2.82
Hay, good quality baled, ton	\$ 80.39	\$ 77.98	\$ 73.74

## Livestock Supplies

Penicillin, injectable, 100 cc	\$ 7.28	\$ 7.00	\$ 7.25
Vitamin A D E, injectable, 100 cc	\$ 9.56	\$ 9.11	\$ 9.52

## Fuel and Oil

Purple gas, 100 litres (minus prov. rebate only)	\$ 44.47	\$ 41.14	\$ 41.29
Diesel fuel, 100 litres, (minus prov. rebate only)	\$ 32.43	\$ 29.66	\$ 28.87
Propane, bulk, 100 litres	\$ 28.65	\$ 25.59	\$ 25.00
Natural gas, GJ	\$ 2.80	\$ 2.91	\$ 3.63
Oil, for diesel engines, 5 litres	\$ 9.52	\$ 9.58	\$ 9.68

## Other

Farm labour, per month, without board	\$ 1,628.95	\$ 1,666.12	\$ 1,693.20
Tractor, 100HP/UP	\$ 74,153.28	\$ 79,237.70	\$ 80,841.84
Tractor, 170HP/UP	\$ 138,223.20	\$ 146,289.30	\$ 150,486.51
Combine, self-propelled	\$ 183,803.50	\$ 197,730.29	\$ 209,658.06
Chisel plow, 23'-27'	\$ 21,144.23	\$ 22,648.89	\$ 24,152.84
Round baler, pull type	\$ 29,948.82	\$ 31,999.35	\$ 33,804.92
Double disc, heavy duty 19'-21'	\$ 22,814.91	\$ 23,837.59	\$ 24,948.85
Truck, 1/2 ton, Ford/Chev	\$ 21,171.30	\$ 21,996.02	\$ 22,975.70

Source: Statistics and Data Development Unit

# Farm Machinery Costs

## How to Use the Farm Machinery Cost Guide

- If you are a **full-time custom operator**, then use the Total Machine Cost + Labor + Profit for estimating a charge. Be sure to adjust fixed costs if your annual hours of use differ much from those quoted.

**Note:** Labor and profit margin are not included in the tables on pages 22 through 30.

- If you are doing custom work on a **good neighbor payment basis**, then it may not be necessary to recover all the fixed costs of owning the machine since these costs represent an annual cost incurred whether or not custom work is done. However, the rate should cover all variable costs that include an allowance for repairs. Labor and profit margin can be adjusted to meet each situation.
- If you plan to do custom work in addition to your own work, so as to partly justify the ownership of a larger machine, then the custom charge should cover variable costs, labor, a profit margin **plus a proportion of fixed costs calculated as follows:**

Proportion of Fixed Costs =

$$\text{Hours of Custom Work} \times \left[ \frac{\text{Total fixed costs}}{\text{Total annual hours of use}} \right]$$

- If you are renting out machinery, then you will wish to cover fixed costs at least and those variable costs such as lubrication and repairs that may not be already covered by the renter.
- If you wish to assess a rate for a full operation such as silage making, which requires several machines, then add the hourly costs of each activity, making sure there is neither omission nor duplication. Use the worksheets provided in part three. The purchase cost estimates are based on average cash prices as of February 1997 for each class of machine. These estimates represent current replacement costs that should be budgeted and charged for, even if you do custom work with older machines, unless the older machine will not do a comparable job.

### Key assumptions

Estimated years of life, annual hours of use and annual repair rates are specified for each type of machine. The salvage value of a new machine is considered to be 10 per cent of the new price.

Diesel fuel is charged at \$0.30 per litre and propane at \$0.22 per litre. Fuel costs vary throughout the year with supply and demand.

Return on investment is calculated using a Bank of Canada 90-day T-bill rate of 4.0 per cent with an additional allowance for risk of 6 per cent. Inflation was included at a 2.0 per cent rate. Income tax considerations have not been included in the calculations.

### Other considerations

- Favorable or unfavorable working conditions, such as size of job, distance, access, topography, soil type and possible down time, may modify the guide figures. Per hour charges allow for some of these situations.
- Different soils and topography may require power units of a different size than those shown here.
- Charges per unit of output such as per acre, per bushel or per bale, defined on work rates per hour, may be quite different from those quoted. Per hour charging overcomes some of these uncertainties.
- You can adjust the labor charge according to your actual cost of hired work or the opportunity cost of your own labor.
- If your experience and farm records suggest that other costs and assumptions would suit your situation, then recalculate using the worksheets in part three or use the online Machinery Cost Calculator at <http://www.agric.gov.ab.ca/machcost>.
- Earlier and faster may be cheaper. There are costs attached to late completion of operations. The rewards for timely, quality work quickly completed by large machines are only earned if the support system, including seed and fertilizer supplies and grain trucking, is well organized.

## **IMPORTANT NOTE CONCERNING THE FOLLOWING PAGES**

**THE PAGES WHICH FOLLOW HAVE BEEN FILMED TWICE IN ORDER TO OBTAIN THE BEST REPRODUCTIVE QUALITY**

**USERS SHOULD CONSULT ALL THE PAGES REPRODUCED ON THE FICHE IN ORDER TO OBTAIN A COMPLETE READING OF THE TEXT.**

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## **REMARQUE IMPORTANTE CONCERNANT LES PAGES QUI SUIVENT**

**LES PAGES SUIVANTES ONT ÉTÉ REPRODUITES EN DOUBLE AFIN D'AMÉLIORER LA QUALITÉ DE REPRODUCTION**

**LES UTILISATEURS DOIVENT CONSULTER TOUTES LES PAGES REPRODUITES SUR LA FICHE AFIN D'OBTENIR LA LECTURE DU TEXTE INTÉGRAL**

# Tractor - 2WD

Years life = 10  
 Annual use (Hrs) = 200, 400\*, 600  
 Annual repair rate = 3% of Replacement cost  
 Salvage Value = 50% Replacement cost

PTO H.P.	Annual Hours Used (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (Labor Omitted**) (\$/hr)	Total Machine Cost (\$/hr)
<b>40 HP</b> <b>without cab</b>	200			23.90		
	400	8	31,650	11.95	5.13	
	600			7.97		
<b>60 HP</b> <b>without cab</b>	200			29.98		
	400	13	39,700	14.99	7.46	
	600			9.99		
<b>80 HP</b>	200			46.19		
	400	17	61,175	23.10	10.45	
	600			15.40		
<b>100 HP</b>	200			61.15		
	400	22	80,975	30.57	13.66	
	600			20.38		
<b>120 HP</b>	200			70.96		
	400	28	93,975	35.48	16.71	
	600			23.65		
<b>150 HP</b>	200			81.89		
	400	32	108,450	40.95	19.17	
	600			27.30		
<b>180 HP</b>	200			95.80		
	400	39	126,863	47.90	22.97	
	600			31.93		
<b>215 HP</b> <b>including MFD</b>	200			112.83		
	400	42	149,425	56.42	25.70	
	600			37.61		

\* This Annual Hours Used figure is typical.

\*\* FWA

MFWD approx. 10,000 under 100 HP  
 approx. 15,000 over 100 HP

# Tractor - 4WD

Years life = 12  
 Annual use (Hrs) = 200, 400\*, 600  
 Annual repair rate = 3% of Replacement cost  
 Salvage Value = 50% Replacement cost

Engine H.P.	Annual Hours Used (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (Labor Omitted**) (\$/hr)	Total Machine Cost (\$/hr)
<b>110 HP Bi-directional</b>	200			72.92		
	400	22	107,000	36.46	15.62	
	600			24.31		
<b>240 HP</b>	200			91.34		
	400	40	134,033	45.67	23.85	
	600			30.45		
<b>275 HP</b>	200			95.41		
	400	53	140,000	47.70	28.79	
	600			31.80		
<b>300 HP</b>	200			107.59		
	400	58	157,867	53.79	31.85	
	600			35.86		
<b>350 HP</b>	200			122.73		
	400	62	180,083	61.36	34.90	
	600			40.91		
<b>425 HP</b>	200			139.93		
	400	85	205,333	69.97	44.72	
	600			46.64		

\* This Annual Hours Used figure is typical.

\*\* Priced without PTO.

# Tractor - 2WD

Years life = 10  
 Annual use (Hrs) = 200, 400\*, 600  
 Annual repair rate = 3% of Replacement cost  
 Salvage Value = 50% Replacement cost

PTO H.P.	Annual Hours Used (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (Labor Omitted**) (\$/hr)	Total Machine Cost (\$/hr)
<b>40 HP without cab</b>	200			23.90		<b>29.03</b>
	400	8	31,650	11.95	5.13	<b>17.08</b>
	600			7.97		<b>13.10</b>
<b>60 HP without cab</b>	200			29.98		<b>37.44</b>
	400	13	39,700	14.99	7.46	<b>22.45</b>
	600			9.99		<b>17.46</b>
<b>80 HP</b>	200			46.19		<b>56.65</b>
	400	17	61,175	23.10	10.45	<b>33.55</b>
	600			15.40		<b>25.85</b>
<b>100 HP</b>	200			61.15		<b>74.81</b>
	400	22	80,975	30.57	13.66	<b>44.24</b>
	600			20.38		<b>34.04</b>
<b>120 HP</b>	200			70.96		<b>87.67</b>
	400	28	93,975	35.48	16.71	<b>52.19</b>
	600			23.65		<b>40.36</b>
<b>150 HP</b>	200			81.89		<b>101.07</b>
	400	32	108,450	40.95	19.17	<b>60.12</b>
	600			27.30		<b>46.47</b>
<b>180 HP</b>	200			95.80		<b>118.76</b>
	400	39	126,863	47.90	22.97	<b>70.87</b>
	600			31.93		<b>54.90</b>
<b>215 HP including MFD</b>	200			112.83		<b>138.53</b>
	400	42	149,425	56.42	25.70	<b>82.11</b>
	600			37.61		<b>63.31</b>

This Annual Hours Used figure is typical.

FWA

MHWD approx. 10,000 under 100 HP

approx. 15,000 over 100 HP

Years life = 12

Annual use (Hrs) = 200, 400\*, 600

Annual repair rate = 3% of Replacement cost

Salvage Value = 50% Replacement cost

## Tractor - 4WD

Engine H.P.	Annual Hours Used (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (Labor Omitted**) (\$/hr)	Total Machine Cost (\$/hr)
<b>110 HP Bi-directional</b>	200			72.92		<b>88.54</b>
	400	22	107,000	36.46	15.62	<b>52.08</b>
	600			24.31		<b>39.92</b>
<b>240 HP</b>	200			91.34		<b>115.20</b>
	400	40	134,033	45.67	23.85	<b>69.52</b>
	600			30.45		<b>54.30</b>
<b>275 HP</b>	200			95.41		<b>124.19</b>
	400	53	140,000	47.70	28.79	<b>76.49</b>
	600			31.80		<b>60.59</b>
<b>300 HP</b>	200			107.59		<b>139.44</b>
	400	58	157,667	53.79	31.85	<b>85.64</b>
	600			35.86		<b>67.71</b>
<b>350 HP</b>	200			122.73		<b>157.62</b>
	400	62	180,083	61.36	34.90	<b>96.26</b>
	600			40.91		<b>75.81</b>
<b>425 HP</b>	200			139.93		<b>184.66</b>
	400	85	205,333	69.97	44.72	<b>114.69</b>
	600			46.64		<b>91.37</b>

This Annual Hours Used figure is typical.  
Priced without PTO.

# Cultivation Equipment

Implement	Tractor (HP)	Power unit or SP unit		Implement		Total Machine Cost (\$/hr)    (Acre/hr)    (\$/acre)	
		Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)		
					Var Cost (\$/hr)		
<b>Plows</b>	Life = 15	Annual hours use = 150		Annual repair rate = 6% Replacement cost			
3 x 16" 3-point	60	3100	14.99	7.46	6.59	3.24	<b>32.28</b> 1.7 <b>19.33</b>
6 x 18" Trailing	180	20 900	47.90	22.97	17.00	8.36	<b>96.22</b> 3.9 <b>24.74</b>
8 x 16" Trailing	180	27 500	47.90	22.97	22.36	11.00	<b>104.23</b> 4.6 <b>22.86</b>
10 x 18" Trailing	275	38 800	47.70	28.79	31.55	15.52	<b>123.56</b> 6.4 <b>19.43</b>
<b>Hd cultivators</b>	Life = 15	Annual Hours Use = 250		Annual repair rate = 6% Replacement cost			
14" Single	80	13,700	23.10	10.45	6.68	3.29	<b>43.52</b> 5.9 <b>7.36</b>
25" Wing	150	21 167	40.95	19.17	10.33	5.08	<b>75.53</b> 10.7 <b>7.08</b>
31" Wing	180	25 967	47.90	22.97	12.67	6.23	<b>89.77</b> 13.2 <b>6.83</b>
42" Wing	275	32 430	47.70	28.79	15.85	7.80	<b>100.14</b> 17.9 <b>5.60</b>
60" Wing	350	57 233	61.36	34.90	27.93	13.74	<b>137.92</b> 25.5 <b>5.42</b>
<b>Field cultivators</b>	Life = 15	Annual Hours Use = 250		Annual repair rate = 6% Replacement cost			
24" Wing	100	26 250	30.57	13.66	12.81	6.30	<b>63.34</b> 10.2 <b>6.22</b>
32" Wing	150	28 533	40.95	19.17	13.90	6.85	<b>80.89</b> 13.6 <b>5.97</b>
42" Wing	180	33 933	47.90	22.97	16.56	8.14	<b>95.57</b> 17.9 <b>5.34</b>
<b>Discs - tandem HD</b>	Life = 15	Annual hours use = 150		Annual repair rate = 6% Replacement cost			
16" Single	120	16 933	35.48	16.71	13.77	6.77	<b>72.73</b> 6.8 <b>10.73</b>
24" Wing	180	29 033	47.90	22.97	23.61	11.61	<b>106.09</b> 10.2 <b>10.42</b>
30" Wing	240	41 450	45.67	23.85	33.71	16.58	<b>119.81</b> 12.7 <b>9.43</b>
12" Heavy offset	150	17 000	40.95	19.17	13.82	6.80	<b>80.74</b> 5.1 <b>15.86</b>
16" Heavy offset	180	20 700	47.90	22.97	16.83	8.28	<b>95.98</b> 6.8 <b>14.16</b>
<b>Rototillers</b>	Life = 15	Annual hours use = 100		Annual repair rate = 6% Replacement cost			
5" Rotor	80	2 850	23.10	10.45	3.48	1.71	<b>38.74</b> 1.3 <b>30.50</b>
6" Rotor	100	3 500	30.57	13.66	4.27	2.10	<b>50.61</b> 1.6 <b>32.44</b>
8" Rotor	120	3 700	35.48	16.71	4.51	2.22	<b>58.92</b> 2.0 <b>29.46</b>

*Note: Annual Hours of Tractor Use* figures are used to determine above *Power Unit* costs.

# Cultivation/Seeding/Spraying Equipment

Implement	Power unit or SP unit						Implement			Total Machine Cost		
	Tractor (HP)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)						
			(\$ hr)	(Acre hr)	(\$ acre)							
<b>Harrows</b>	Life = 15						Annual hours use = 40					
Spring tooth 50'	100	9,500	30.57	13.66	28.97	4.75	<b>77.96</b>	29.7	2.63			
Spring tooth 70'	150	13,500	40.95	19.17	41.17	6.75	<b>108.04</b>	41.6	2.60			
Harrow packers 50'	150	19,833	40.95	19.17	60.48	9.92	<b>130.52</b>	21.2	6.15			
Harrow packers 70'	240	25,233	45.67	23.85	76.95	12.62	<b>159.09</b>	29.7	5.36			
Heavy Harrow 50'	180	20,000	47.90	22.97	60.99	10.00	<b>141.86</b>	21.2	6.69			
Heavy Harrow 70'	180	24,333	47.90	22.97	74.21	12.17	<b>157.24</b>	29.7	5.30			
<b>Seed drills</b>	Life = 15						Annual hours use = 100					
End wheel 12'	60	12,750	14.99	7.46	15.55	2.55	<b>40.55</b>	4.4	9.30			
Hoe drill 12'	80	18,400	23.10	10.45	22.45	3.68	<b>59.68</b>	4.4	13.69			
Zero Min. till 10'	80	36,350	23.10	10.45	44.34	7.27	<b>85.16</b>	3.7	23.20			
<b>Air seeder w. cult.</b>	Life = 15						Annual hours use = 150					
30' Air seeder	180	71,325	47.90	22.97	100.62	14.27	<b>185.75</b>	10.9	17.03			
40' Air seeder	300	82,450	53.79	31.85	116.31	16.49	<b>218.44</b>	14.6	15.00			
50' Air seeder	350	105,825	61.36	34.90	149.28	21.17	<b>266.71</b>	18.2	14.65			
<b>Air drills</b>	Life = 6						Annual hours use = 100					
30' Air drill	240	82,225	45.67	23.85	173.99	24.67	<b>268.18</b>	10.9	24.58			
40' Air drill												
With packer wheels	300	102,625	53.79	31.85	217.16	30.79	<b>333.59</b>	14.6	22.91			
50' Air drill												
With packer wheels	425	129,475	64.97	44.12	273.97	38.84	<b>427.51</b>	18.2	23.52			
<b>Sprayer (trailer)</b>	Life = 15						Annual hours use = 50					
Annual repair rate = 3% Replacement cost												
625 gallon 80' low vol												
Air assist	80	30,000	25.10	10.45	73.19	18.00	<b>124.74</b>	40.8	3.06			
800 gallon 80'	150	26,350	40.95	19.17	64.29	15.81	<b>440.22</b>	40.8	3.44			
1200 gallon 110'	150	35,000	40.95	19.17	85.39	21.00	<b>166.51</b>	55.9	2.98			
<b>Sprayer (SP)</b>	Life = 10						Annual hours use = 200					
Annual repair rate = 3% Replacement cost												
400 gallon 70' 125HP												
High clearance	125	98,000	74.76	20.34			<b>95.09</b>	50.9	1.87			
600 gallon 70' 135HP												
High clearance	135	133,060	100.48	36.24			<b>126.71</b>	50.9	2.49			
800 gallon 90' 175HP												
High clearance	155	200,800	151.63	38.75			<b>190.37</b>	66.9	2.91			
1000 gallon 120' 250HP	200	248,480	187.63	48.74			<b>235.87</b>	110.0	2.14			

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs

# Cultivation Equipment

Implement	Tractor (HP)	Current Replacement Cost (\\$)	Power unit or SP unit		Implement		Total Machine Cost (\\$/hr)	Acre/hr	(\\$/acre)
			Fixed Cost (\\$/hr)	Var Cost (\\$/hr)	Fixed Cost (\\$/hr)	Var Cost (\\$/hr)			
<b>Plows</b>	Life = 15			Annual hours use = 150		Annual repair rate = 6% Replacement cost			
3 x 16" 3-point	60	8100	14.99	7.46	6.59	3.24		1.7	
6 x 18" Trailing	180	20,900	47.90	22.97	17.00	8.36		3.9	
8 x 16" Trailing	180	27,500	47.90	22.97	22.36	11.00		4.6	
10 x 18" Trailing	275	38,800	47.70	28.79	31.55	15.52		6.4	
<b>Hd cultivators</b>	Life = 15			Annual Hours Use = 250		Annual repair rate = 6% Replacement cost			
14' Single	80	13,700	23.10	10.45	6.68	3.29		5.9	
25' Wing	150	21,167	40.95	19.17	10.33	5.08		10.7	
31' Wing	180	25,967	47.90	22.97	12.67	6.23		13.2	
42' Wing	275	32,490	47.70	28.79	15.85	7.80		17.9	
60' Wing	350	57,233	61.36	34.90	27.93	13.74		25.5	
<b>Field cultivators</b>	Life = 15			Annual Hours Use = 250		Annual repair rate = 6% Replacement cost			
24' Wing	100	26,250	30.57	13.66	12.81	6.30		10.2	
32' Wing	150	28,533	40.95	19.17	13.92	6.85		13.6	
42' Wing	180	33,933	47.90	22.97	16.56	8.14		17.9	
<b>Discs - tandem HD</b>	Life = 15			Annual hours use = 150		Annual repair rate = 6% Replacement cost			
16' Single	120	16,933	35.48	16.71	13.77	6.77		6.8	
24' Wing	180	29,033	47.90	22.97	23.61	11.61		10.2	
30' Wing	240	41,450	45.67	23.85	33.71	16.58		12.7	
12' Heavy offset	150	17,000	40.95	19.17	13.82	6.80		5.1	
18' Heavy offset	180	20,700	47.90	22.97	16.83	8.28		6.8	
<b>Rototillers</b>	Life = 15			Annual hours use = 100		Annual repair rate = 6% Replacement cost			
5' Rotor	80	2,850	23.10	10.45	3.48	1.71		1.3	
6' Rotor	100	3,500	30.57	13.66	4.27	2.10		1.6	
8' Rotor	120	3,700	35.48	16.71	4.51	2.22		2.0	

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

# Cultivation/Seeding/Spraying Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
<b>Harrows</b>	Life = 15		Annual hours use = 40			Annual repair rate = 2% Replacement cost			
Spring tooth 50'	100	9,500	30.57	13.66	28.97	4.75	7.7	29.7	12.0
Spring tooth 70'	150	13,500	40.95	19.17	41.17	6.75	7.7	41.6	16.0
Harrow packers 50'	150	19,833	40.95	19.17	60.48	9.92	7.7	21.2	12.0
Harrow packers 70'	240	25,233	45.67	23.85	76.95	12.62	7.7	29.7	16.0
Heavy Harrow 50'	180	20,000	47.90	22.97	60.99	10.00	7.7	21.2	12.0
Heavy Harrow 70'	180	24,333	47.90	22.97	74.21	12.17	7.7	29.7	16.0
<b>Seed drills</b>	Life = 15		Annual hours use = 100			Annual repair rate = 2% Replacement cost			
End wheel 12'	60	12,750	14.99	7.46	15.55	2.55	7.7	4.4	12.0
Hoe drill 12'	80	18,400	23.10	10.45	22.45	3.68	7.7	4.4	16.0
Zero/Min. till 10'	80	36,350	23.10	10.45	44.34	7.27	7.7	3.7	12.0
<b>Air seeder w/cult.</b>	Life = 15		Annual hours use = 150			Annual repair rate = 3% Replacement cost			
30' Air seeder	180	71,325	47.90	22.97	100.62	14.27	7.7	10.9	12.0
40' Air seeder	300	82,450	53.79	31.85	116.31	16.49	7.7	14.6	16.0
50' Air seeder	350	105,825	61.36	34.90	149.28	21.17	7.7	18.2	12.0
<b>Air drills</b>	Life = 6		Annual hours use = 100			Annual repair rate = 3% Replacement cost			
30' Air drill	240	82,225	45.67	23.85	173.99	24.67	7.7	10.9	12.0
40' Air drill With packer wheels	300	102,625	53.79	31.85	217.16	30.79	7.7	14.6	16.0
50' Air drill With packer wheels	425	129,475	69.97	44.72	273.97	38.84	7.7	18.2	12.0
<b>Sprayer (trailer)</b>	Life = 15		Annual hours use = 50			Annual repair rate = 3% Replacement cost			
625 gallon 80' low vol Air assist	80	30,000	23.10	10.45	73.19	18.00	7.7	40.8	12.0
800 gallon 80'	150	26,350	40.95	19.17	64.29	15.81	7.7	40.8	16.0
1200 gallon 110'	150	35,000	40.95	19.17	85.39	21.00	7.7	55.9	12.0
<b>Sprayer (SP)</b>	Life = 10		Annual hours use = 200			Annual repair rate = 3% Replacement cost			
400 gallon 70' 125HP High clearance	125	99,000	74.76	20.34	—	—	7.7	50.9	12.0
600 gallon 70' 135HP High clearance	135	133,060	100.48	26.24	—	—	7.7	50.9	16.0
800 gallon 90" 175HP High clearance	175	200,800	151.63	38.75	—	—	7.7	65.5	12.0
1000 gallon 120' 250HP	200	248,480	187.63	48.24	—	—	7.7	110.0	16.0

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

# Forage Equipment

Implement	Power unit or				Implement		Total Machine Cost		
	Current Tractor (HP)	Replacement Cost (\$)	SP unit Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)		(\$/hr)	(Acre/hr)
<b>Swather (SP)</b> Life = 7 Annual hours use = 100 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost									
Diesel with 20' header	80	75,150	142.62	26.00	—	—	8.5		
<b>Swather (pull-type)</b> Life = 7 Annual hours use = 100 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost									
21' Grain	80	17,720	23.10	10.45	33.63	5.32	8.9		
25' Grain	80	19,180	23.10	10.45	36.40	5.75	10.7		
<b>Disk mower</b> Life = 6 Annual hours use = 100 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost									
15' SP Diesel	0	90,750	192.03	38.27	—	—	6.4		
9'	80	23,050	23.10	10.45	48.77	6.92	3.9		
12'	100	26,775	30.57	13.66	56.66	15.62	5.1		
<b>Mower conditioner</b> Life = 7 Annual hours use = 100 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost									
14' SP Diesel	100	79,933	151.70	29.62	—	—	5.9		
9' PTO	80	16,300	23.10	10.45	30.93	4.89	3.9		
12' PTO	100	22,925	30.57	13.66	43.51	14.47	5.1		
14' PTO	120	26,200	35.48	16.71	49.72	7.86	5.9		
<b>Rotary mowers</b> Life = 7 Annual hours use = 100 Annual repair rate = 3% Replacement cost									
20' Wing type	150	25,900	40.95	19.17	49.15	7.77	8.5		
10' Heavy duty	100	11,750	30.57	13.66	22.30	3.53	4.2		
<b>Rake</b> Life = 15 Annual hours use = 50 Annual repair rate = 2% Replacement cost									
10' Rotary	40	6,500	11.95	5.13	15.86	2.60	4.2		
<b>Forage harvester</b> Life = 6 Annual hours use = 400 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost									
SP 450 HP	450	271,000	143.36	51.38	—	—	8.5		
SP 350 HP	350	242,500	128.28	39.58	—	—	8.5		
20' Pultype	150	37,600	40.95	19.17	19.89	2.82	6.8		
24' Pultype	240	47,400	45.67	23.85	25.07	3.56	8.5		

200 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Dump wagon	Life = 15	Annual hours use = 200			Annual repair rate = 2% Replacement cost			
Small (700 cu ft)	0	13,500	8.23	1.35	—	—	8.5	
Medium (900 cu ft)	0	18,500	11.28	1.85	—	—	8.5	
Large (1200 cu ft)	0	21,000	12.81	2.10	—	—	8.5	
Conveyor type								

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

# Baling Equipment

Implement	Power unit or SP unit				Implement				Total Machine Cost (\$/hr)	Twine Cost (\$/bale)	Total Cost (\$/bale)
	Tractor (HP)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	Total Machine Cost (\$/hr)	(Bales/hr)			
<b>Balers (standard)</b> Life = 7 Annual hours use = 100 Annual repair rate = 3% Replacement cost = 50% Replacement cost											
Small 14" x 18"	60	22,225	14.99	7.46	42.18	6.67	71.30	200		0.04	
Large 16" x 18"	80	25,300	23.10	10.45	48.01	7.59	89.15	300		0.04	
<b>Large round</b> Life = 7 Annual hours use = 100 Annual repair rate = 3% Replacement cost = 50% Replacement cost											
4' x 6' Bale	80	26,675	23.10	10.45	50.62	8.00	92.18	18		0.40	
5' x 6' Bale	100	32,762	30.57	13.66	62.18	9.83	116.24	16		0.40	
<b>Large square</b> Life = 10 Annual hours use = 300 Annual repair rate = 3% Replacement cost = 50% Replacement cost											
1500-2000 lb Bale	150	93,866	40.95	19.17	47.25	9.39	116.76	10		0.20	
<b>Bale wagons</b> Life = 12 Annual hours use = 150 Annual repair rate = 3% Replacement cost = 50% Replacement cost											
SP 160 Bale	80	140,000	127.21	41.32			168.53	400			
Pull 104 Bale	120	35,000	35.48	16.71	31.80	7.00	90.99	240			

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

## Forage Equipment

Implement	Power unit or SP unit								Implement		
	Tractor (HP)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	Total Machine Cost (\$/hr)	(Acre/hr)	(\$/acre)		
<b>Swather (SP)</b> Life = 7 Annual hours use = 100 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost											
Diesel with 20' header	80	75 150	142.62	26.00			<b>168.62</b>	8.5	<b>19.88</b>		
<b>Swather (pull-type)</b> Life = 7 Annual hours use = 100 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost											
21' Grain	80	17 720	23.10	10.45	33.63	5.32	<b>72.50</b>	8.9	<b>8.14</b>		
25' Grain	80	19 180	23.10	10.45	36.40	5.75	<b>75.70</b>	10.7	<b>7.10</b>		
<b>Disk mower</b> Life = 6 Annual hours use = 100 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost											
15' SP Diesel	0	90 750	192.03	38.27			<b>230.29</b>	6.4	<b>36.21</b>		
9'	80	23 050	23.10	10.45	48.77	6.92	<b>89.24</b>	3.9	<b>22.94</b>		
12'	100	26 775	30.57	13.66	56.66	15.62	<b>116.51</b>	5.1	<b>22.89</b>		
<b>Mower conditioner</b> Life = 7 Annual hours use = 100 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost											
14' SP Diesel	100	79 933	151.70	29.62			<b>181.32</b>	5.9	<b>30.68</b>		
9' PTO	80	16 300	23.10	10.45	30.93	4.89	<b>69.37</b>	3.9	<b>17.83</b>		
12' PTO	100	22 925	30.57	13.66	43.51	14.47	<b>102.21</b>	5.1	<b>20.08</b>		
14' PTO	120	26 200	35.48	16.71	49.72	7.86	<b>109.77</b>	5.9	<b>18.51</b>		
<b>Rotary mowers</b> Life = 7 Annual hours use = 100 Annual repair rate = 3% Replacement cost											
20' Wing type	150	25 900	40.95	19.17	49.15	7.77	<b>117.04</b>	8.5	<b>13.80</b>		
10' Heavy duty	100	11 750	30.57	13.66	22.30	3.53	<b>70.06</b>	4.2	<b>16.52</b>		
<b>Rake</b> Life = 15 Annual hours use = 50 Annual repair rate = 2% Replacement cost											
10' Rotary	40	6 500	11.95	5.13	15.86	2.60	<b>35.54</b>	4.2	<b>8.38</b>		
<b>Forage harvester</b> Life = 6 Annual hours use = 400 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost											
SP 450 HP	450	271 000	143.36	51.38			<b>194.74</b>	8.5	<b>22.96</b>		
SP 350 HP	350	242 500	128.28	39.58			<b>167.86</b>	8.5	<b>19.79</b>		
20' Pulleytype	150	37 600	40.95	19.17	19.89	2.82	<b>82.83</b>	6.8	<b>12.22</b>		
24' Pulleytype	240	47 400	45.67	23.85	25.07	3.56	<b>98.15</b>	8.5	<b>11.57</b>		
200 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.											
<b>Dump wagon</b> Life = 15 Annual hours use = 200 Annual repair rate = 2% Replacement cost											
Small (700 cu ft)	0	13 500	8.23	1.35			<b>9.58</b>	8.5	<b>1.13</b>		
Medium (900 cu ft)	0	18 500	11.28	1.85			<b>13.13</b>	8.5	<b>1.55</b>		
Large (1200 cu ft)	0	21 000	12.81	2.10			<b>14.91</b>	8.5	<b>1.76</b>		
100 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.											

## Baling Equipment

Implement	Power unit or SP unit				Implement			Twine Cost (\$/bale)	Total Cost (\$/bale)
	Tractor (HP)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	Total Machine Cost (\$/hr)	(Bales/hr)	(\$/bale)
<b>Balers (standard)</b> Life = 7 Annual hours use = 100 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost									
Small 14" x 18"	60	22 225	14.99	7.46	42.18	6.67	71.50	200	<b>0.36</b>
Large 16" x 18"	80	25 300	23.10	10.45	48.01	7.59	89.15	300	<b>0.30</b>
<b>Large round</b> Life = 7 Annual hours use = 100 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost									
4' x 6' Bale	80	26 675	23.10	10.45	50.62	8.00	92.18	18	<b>5.12</b>
5' x 6' Bale	100	32 762	30.57	13.66	62.18	9.83	116.24	16	<b>7.27</b>
<b>Large square</b> Life = 10 Annual hours use = 300 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost									
1500-2000 lb Bale	150	93 866	40.95	19.17	47.25	9.39	116.76	10	<b>11.68</b>
<b>Bale wagons</b> Life = 12 Annual hours use = 150 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost									
SP 160 Bale	80	140 000	127.21	41.32			168.53	400	<b>0.42</b>
Pull 104 Bale	120	35 000	35.48	16.71	31.80	7.00	90.99	240	<b>0.38</b>
400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.									

# Combines

Years life = 7  
 Annual use (Hrs) = 100, 200, 300  
 Annual repair rate = 3% of Replacement cost  
 Salvage Value = 50% Replacement cost

Combine Cylinder Width	Annual Hours Used (hrs)	Current Replacement Cost (\$)	Power unit or SP unit		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
<b>SP Diesel</b>	100		229.41		<b>262.84</b>		<b>40.44</b>
50 Inch Cylinder (HP = 175)	200	158.500	114.70	33.44	<b>148.14</b>	6.5	<b>22.79</b>
	300		76.47		<b>109.90</b>		<b>16.91</b>
<b>SP Diesel</b>	100		303.95		<b>346.49</b>		<b>40.76</b>
60 Inch Cylinder (HP = 270)	200	210.000	151.97	42.54	<b>194.51</b>	8.5	<b>22.88</b>
	300		101.32		<b>143.86</b>		<b>16.92</b>
<b>Rotary type</b>	100		267.62		<b>307.08</b>		<b>36.13</b>
(Small) (HP = 175)	200	184.900	133.81	39.47	<b>173.27</b>	8.5	<b>20.39</b>
	300		89.21		<b>128.67</b>		<b>15.14</b>
<b>Rotary type</b>	100		285.04		<b>328.03</b>		<b>34.53</b>
(Medium) (HP = 250)	200	196.933	142.52	42.99	<b>185.51</b>	9.5	<b>19.53</b>
	300		95.01		<b>138.01</b>		<b>14.53</b>
<b>Rotary type</b>	100		318.60		<b>368.87</b>		<b>35.13</b>
(Large) (HP = 300)	200	220.125	159.30	50.27	<b>209.57</b>	10.5	<b>19.96</b>
	300		106.20		<b>156.47</b>		<b>14.90</b>

This Annual Hours Used figure is typical.

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

# Grinders, Mixers and Dryers

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost (\$/hr)	(Tons/hr)	(\$/Tons)
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)			
<b>Bale processor</b>	Life = 12		Annual hours use = 80			Annual repair rate = 3% Replacement cost			
Average Capacity	80	11 733	23.10	10.45	19.99	4.40	<b>57.94</b>		
<b>Tub grinder</b>	Life = 12		Annual hours use = 80			Annual repair rate = 3% Replacement cost			
15 Tons/hour	120	14 500	35.48	16.71	24.70	5.44	<b>82.33</b>	15.0	<b>5.49</b>
35 Tons/hour	150	29 500	40.95	19.17	50.26	11.06	<b>121.44</b>	35.0	<b>3.47</b>
40 Tons/hour	180	38 000	47.90	22.97	64.74	14.25	<b>149.86</b>	40.0	<b>3.75</b>
<b>Portable grinder/ Mix</b>	Life = 10		Annual hours use = 80			Annual repair rate = 3% Replacement cost			
24" Screen and bale shredder	100	24 000	30.57	13.66	45.31	9.00	<b>98.54</b>		
 <b>Moisture Drop</b>									
<b>Grain Dryers</b>	Life = 12		Annual hours use = 200			Ann. repair rate = 3% Replacement cost			
<b>Recirculating batch</b>							<b>20-14% (\$/Tonne)</b>	<b>17.5-14% (\$/Tonne)</b>	
500 Bu 30,000 BTU Propane = 114 L/hr	40	29 300	11.95	5.13	19.97	32.77	<b>69.82</b>	11.64 (6.0 T/hr)	7.76 (9.0 T/hr)
<b>Continuous flow</b>									
- small Propane = 110 L/hr	40	45 000	11.95	5.13	30.67	34.25	<b>82.00</b>	18.64 (6.0 T/hr)	8.63 (9.5 T/hr)
- medium Propane = 145 L/hr	40	60 000	11.95	5.13	40.89	45.25	<b>103.22</b>	15.88 (9.0 T/hr)	7.59 (13.6 T/hr)
- large Propane = 180 L/hr	40	80 000	11.95	5.13	54.52	62.00	<b>133.60</b>	10.28 (18.0 T/hr)	4.91 (23.2 T/hr)

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Natural gas drying costs are lower than propane.

Other variables such as relative humidity and air temperature can dramatically affect fuel consumption and throughput.

Years life = 7

Annual use (Hrs) = 100, 200\*, 300

Annual repair rate = 3% of Replacement cost

Salvage Value = 50% Replacement cost

## Combines

Combine Cylinder Width	Annual Hours Used (hrs)	Current Replacement Cost (\$)	Power unit or SP unit		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
<b>SP Diesel</b> 50 Inch Cylinder (HP = 175)	100	229.41					
	200	158,500	114.70	33.44			6.5
	300	76.47					
<b>SP Diesel</b> 60 Inch Cylinder (HP = 270)	100	303.95					
	200	210,000	151.97	42.54			8.5
	300	101.32					
<b>Rotary type</b> (Small) (HP=175)	100	267.62					
	200	184,900	133.81	39.47			8.5
	300	89.21					
<b>Rotary type</b> (Medium) (HP=250)	100	285.04					
	200	196,933	142.52	42.99			9.5
	300	95.01					
<b>Rotary type</b> (Large) (HP=300)	100	318.60					
	200	220,125	159.30	50.27			10.5
	300	106.20					

\* This Annual Hours Used figure is typical.

\*\* 400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

# Grinders, Mixers and Dryers

Implement	Power unit or SP unit				Implement		Total Machine Cost					
	Tractor (HP)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)						
<b>Bale processor</b>	Life = 12				Annual hours use = 80				Annual repair rate = 3% Replacement cost			
Average Capacity	80	11,733	23.10	10.45	19.99	4.40						
<b>Tub grinder</b>	Life = 12				Annual hours use = 80				Annual repair rate = 3% Replacement cost			
15 Tons/hour	120	14,500	35.48	16.71	24.70	5.44				15.0		
35 Tons/hour	150	29,500	40.95	19.17	50.26	11.06				35.0		
40 Tons/hour	180	38,000	47.90	22.97	64.74	14.25				40.0		
<b>Portable grinder/mix</b>	Life = 10				Annual hours use = 80				Annual repair rate = 3% Replacement cost			
24" Screen and bale shredder	100	24,000	30.57	13.66	45.31	9.00						

Grain Dryers	Moisture Drop											
	20-14%	17.5-14%										
<b>Recirculating batch</b>	Life = 12				Annual hours use = 200		Ann. repair rate = 3% Replacement cost					
500 Bu 30,000 BTU Propane = 114 L/hr	40	29,300	11.95	5.13	19.97	32.77			<b>11.64</b> (6.0 T/hr)	<b>7.78</b> (9.0 T/hr)		
<b>Continuous flow</b>												
- small Propane = 110 L/hr	40	45,000	11.95	5.13	30.67	34.25			<b>18.64</b> (6.0 T/hr)	<b>8.63</b> (9.5 T/hr)		
- medium Propane = 145 L/hr	40	60,000	11.95	5.13	40.89	45.25			<b>15.88</b> (9.0 T/hr)	<b>7.59</b> (13.6 T/hr)		
- large Propane = 180 L/hr	40	80,000	11.95	5.13	54.52	62.00			<b>10.28</b> (18.0 T/hr)	<b>4.91</b> (27.2 T/hr)		

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Natural gas drying costs are lower than propane.

Other variables such as relative humidity and air temperature can dramatically affect fuel consumption and throughput.

Years life = 15

Annual use (Hrs) = 50, 150\*, 450

Annual repair rate = 3% of Replacement cost

## Farm Trucks

Truck Size	Annual Hours Used	Diesel Fuel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (\$/hr)	Total Truck Cost (\$/hr)
<b>General Trucking</b>	50			158.58		
3 ton diesel	150	31.00	65,000	52.86	23.70	
W/box & hoist	450			16.13		
	50			182.98		
4 ton diesel	150	38.00	75,000	60.99	28.11	
W/box & hoist	450			20.33		
	50			226.89		
5 ton diesel	150	43.00	93,000	75.63	29.97	
W/box & hoist	450			25.21		

\* This Annual Hours Used figure is typical.

## Rock Pickers

Implement	Power unit or SP unit				Implement		Total Machine Cost (\$/hr) (acre/hr) (\$/acre)					
	Tractor (HP)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)						
<b>Rock picker</b>	Life = 10				Annual hours use = 150				Annual repair rate = 6% Replacement cost			
Rake - picker combo	80	18,000	23.10	10.45	18.12	7.20						
– reel type	80	17,500	23.10	10.45	17.62	7.00						

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

## Grain Vacuums

Implement	Power unit or SP unit				Implement		Total Machine Cost (\$/hr) (bu/hr) (\$/bu)					
	Tractor (HP)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)						
<b>Grain vacuums</b>	Life = 15				Annual hours use = 150				Annual repair rate = 3% Replacement cost			
Large	120	14,000	35.48	16.71	11.39	2.80				1800.0		

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.



Years life = 15  
 Annual use (Hrs) = 50, 150\*, 450  
 Annual repair rate = 3% of Replacement cost

## Farm Trucks

Truck Size	Annual Hours Used	Diesel Fuel Use (Litres hr)	Current Replacement Cost (\$)	Fixed Cost (\$ hr)	Variable Cost (\$ hr)	Total Truck Cost (\$/hr)
<b>General Trucking</b>	50			158.58		<b>182.28</b>
4 ton diesel	150	31.00	65 000	52.86	23.70	<b>76.56</b>
W box & hoist	450			16.13		<b>41.32</b>
	50			182.98		<b>211.09</b>
4 ton diesel	150	38.00	75 000	60.99	28.11	<b>89.10</b>
W box & hoist	450			20.33		<b>48.44</b>
	50			226.89		<b>260.33</b>
5 ton diesel	150	43.00	93 000	75.63	29.97	<b>109.07</b>
W box & hoist	450			25.21		<b>58.65</b>

This Annual Hours Used figure is typical.

## Rock Pickers

Implement	Power unit or SP unit				Implement		Total Machine Cost	
	Tractor (HP)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)		
<b>Rock picker</b>	Life = 10 Annual hours use = 150				Annual repair rate = 6% Replacement cost			
Rake - picker combo	80	18 000	23.10	10.45	18.12	7.20	<b>58.87</b>	
- reel type	80	17 500	23.10	10.45	17.62	7.00	<b>58.17</b>	

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

## Grain Vacuums

Implement	Power unit or SP unit				Implement		Total Machine Cost	
	Tractor (HP)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)		
<b>Grain vacuums</b>	Life = 15 Annual hours use = 150				Annual repair rate = 3% Replacement cost			
Large	120	14 000	35.48	16.71	11.39	2.80	<b>66.37</b>	
							<b>0.04</b>	

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

# Calculating Farm Machinery Costs

## Preface

The worksheets and tables on the following pages can be used to calculate the costs of operating your own machines. An explanation of the variables is provided on the following page. A sample calculation is done for you on pages 33 through 35 and blank worksheets are provided on pages 36 through 38. Standards for fuel consumption, depreciation annual use, repair rates and field efficiency are given in the tables on pages 39 and 40. **During 1999, we developed an online machinery cost calculator that brings the worksheet on page 34 to life. This calculator is available free of charge to you at [www.agric.gov.ab.ca/machcost](http://www.agric.gov.ab.ca/machcost).**

### Online Cost Calculator Instructions

To use the calculator:

Page 1 has 3 pop windows:

1. Power units and self propelled – click on it and scroll down until you find the machine you want and highlight it (e.g. 300hp tractor)
2. Implement 1 – if you selected a tractor in the first window, now select the implement you want to pull (e.g. 40 ft air seeder). If you selected a self-propelled machine, don't go here.
3. Implement 2 – if you aren't pulling two implements, click on this and select the second implement (e.g. harrow packer). If you aren't pulling two implements in tandem, ignore the second implement.
4. After selecting the machine(s) you want, click on the **proceed to calculator** button and page 2 will appear.

Page 2 has the cost information for the specific machine you chose from the data base. All these numbers are soft, so you can override one or all of them and enter your own numbers. To do this, just click on the number you want to change and type in the new number. When you have all the input data modified to your satisfaction, click on **calculate costs**.

Page 3 – the top (Input Parameters) is a summary of your input data. The bottom is the calculated cost result. If you want to change any of the inputs, click on the back button, which will take you back to the second page.

If you have any problems using the calculator, please contact Dann Mattson at (403) 556-4248 or email [dann.mattson@agric.gov.ab.ca](mailto:dann.mattson@agric.gov.ab.ca)

If you need further assistance in using this material, contact an Alberta Agriculture, Food and Rural Development Farm Management Specialist at one of the following locations.

Airdrie	(403) 948-8524
Barhead	(780) 674-8213
Claresholm	(403) 625-1445
Fairview	(780) 835-2241
Leduc	(780) 986-8985
Red Deer	(403) 340-7007
Stettler	(403) 742-7500
Taber	(403) 223-7907
Vegreville	(780) 632-5400

To contact a Farm Management Specialist outside your local calling area, use the RITE system for toll-free long distance service. Just dial 310-0000 and then enter the seven digit number of the office you want or stay on the line to get operator assistance.

# Machinery Cost Terms

Record all the information needed to calculate ownership and operating costs on page 34. Items **N** through **Q** will require use of the formulas on page 33.

Term	Line	Information Required
<b>Machine description</b>		
		The machines' make and model.
<b>Data and Assumptions</b>		
<b>Today's new price</b>	<b>A</b>	The suggested retail price of the desired machine (new or used).
<b>Planning period</b>	<b>B</b>	The number of years the machine will be owned.
<b>Today's used price</b>	<b>C</b>	The price of a used machine that is similar to the new desired machine and as old as the planning period.
<b>Annual hours of use</b>	<b>D</b>	Total annual use for all operations.
<b>Fuel usage</b>	<b>E</b>	Litres or gallons per hour.
<b>Fuel cost</b>	<b>F</b>	\$ per gallon or litre
<b>Labour cost</b>	<b>G</b>	\$ per hour
<b>Annual repair rate</b>	<b>H</b>	Percentage of new price [refer to table on page 39].
<b>Risk free interest rate</b>	<b>I</b>	The Bank of Canada 90 day T-Bill rate or equivalent.
<b>Risk premium</b>	<b>J</b>	A value estimate which represents the additional risk of the investment over and above the 90 day T-bill rate. [6% is commonly used]
<b>Marginal tax rate</b>	<b>K</b>	The expected marginal tax rate of the farm business during the planning period.
<b>Rate of inflation</b>	<b>L</b>	The current rate of inflation, e.g. the consumer price index.

Term	Line	Information Required
<b>Formulas</b>		
<b>Real discount rate</b>	<b>N</b>	Interest rate adjusted for expected risk and inflation. [calculated on page 33]
<b>Real discount factor</b>	<b>O</b>	Value used to arrive at the present value (dollar amount) of the future salvage value of the machine. [calculated on page 33]
<b>Capital cost allowance (CCA) Adjustment factor</b>	<b>P</b>	Value used to arrive at the after tax capital outlay as well as adjustment for the after tax salvage value. [calculated on page 33]
<b>Capital recovery factor</b>	<b>Q</b>	Value that recovers the capital value of the machine through time with the specified real return. [calculated on page 33]
Using the Data and Assumptions [items A through M] and the Formula Results [items N through Q], calculate the ownership and operating costs for the machine combination. The summary sheet on page 35 can be used to list and total costs for all field operations and to calculate per acre (bale, bushel, etc.) values.		

# Worksheet Formulas

## N Real Discount Rate

$$= \left[ \left( \frac{(1 + I + J)}{1 + L} \right)^{-1} \right] \times (1 - K) = \left[ \left( \frac{(1 + .04 + .06)}{1 + .02} \right)^{-1} \right] \times (1 - 0)$$

I = Interest rate

J = Risk premium

K = Marginal tax rate

L = Rate of inflation

$$= .0784$$

## O Real Discount Factor - Power unit or self-propelled machine

$$= \frac{1}{(1 + N)^B} = \frac{1}{(1 + .0784)^{12}} = .4042$$

$$\text{Implement 1} = \frac{1}{(1 + .0784)^{15}} = .3223$$

$$\text{Implement 2} = \frac{1}{(1 + \text{_____})} = \text{_____}$$

B = Planning period

N = Real discount rate

## P CCA Adjustment Factor - Power unit or self-propelled machine

$$= 1 - \left( \frac{M \times K}{M + N} \right) = 1 - \left( \frac{.30 \times 0}{.30 + .0784} \right) = 1$$

$$\text{Implement 1} = 1 - \left( \frac{.20 \times 0}{.20 + .0784} \right) = 1$$

$$\text{Implement 2} = 1 - \left( \frac{\text{_____} \times \text{_____}}{\text{_____} + \text{_____}} \right) = \text{_____}$$

K = Marginal tax rate

M = CCA class rate

N = Real discount rate

## Q Capital Recovery Factor

$$= \frac{N}{(1 - O)} = \frac{.0784}{(1 - .4042)} = .1816$$

$$\text{Implement 1} = \frac{.0784}{(1 - .3223)} = .2433$$

$$\text{Implement 2} = \frac{\text{_____}}{(1 - \text{_____})} = \text{_____}$$

N = Real discount rate

O = Real discount factor

# Machinery Cost Worksheet

Field Operation	Power Unit or self- propelled unit	Implement 1	Implement 2	Total
<b>Machine descriptions:</b>	<u>270 HP</u> <u>4 WD</u>	<u>40 ft</u> <u>Air Drill</u>		
<b>Data &amp; assumptions</b>				
A New price	<u>\$140,000</u>	<u>\$103,000</u>	<u>\$</u>	
B Planning period (years)	<u>12 yrs</u>	<u>15 yrs</u>	<u>yrs</u>	
C Used price	<u>\$70,000</u>	<u>\$10,300</u>	<u>\$</u>	
D Annual hours of use (total use all operations)	<u>400 hrs</u>	<u>150 hrs</u>		<u>hrs</u>
E Fuel usage (litres per hour)	<u>53 l/hr</u>			
F Fuel cost (\$ per litre)	<u>\$0.30</u>			
G Labor cost (\$ per hour)	<u>\$0</u>			
H Annual repair rate (% of new price)	<u>3.0 %</u>	<u>3.0 %</u>		<u>%</u>
I Interest rate (risk free)	<u>4.0 %</u>			
J Risk premium	<u>6.0 %</u>			
K Marginal tax rate	<u>0 %</u>			
L Rate of inflation	<u>2.0 %</u>			
M CCA class rate	<u>30 %</u>	<u>20 %</u>		<u>%</u>
<b>Formula results</b>				
N Real discount rate	<u>.0784</u>			
O Real discount factor	<u>.4042</u>	<u>3.223</u>		
P CCA adjustment factor	<u>1</u>	<u>1</u>		
Q Capital recovery factor	<u>.1316</u>	<u>.1157</u>		
<b>Ownership Costs</b>				
1. Capital recovery (\$ per year)				
= [(Line A x Line P) - (Line C x Line P x Line O)] x Line Q	<u>\$14,703</u>	<u>\$ 11,534</u>	<u>\$</u>	
2. Insurance and housing (\$ per year)	<u>= Line A x 1%</u>	<u>\$ 1,400</u>	<u>\$ 1030</u>	<u>\$</u>
3. Total annual ownership costs	<u>= Line 1 + Line 2</u>	<u>\$16,103</u>	<u>\$12,564</u>	<u>\$</u>
4. Total ownership costs per hour	<u>= Line 3 ÷ Line D</u>	<u>\$ 40.26</u>	<u>\$ 147.82</u>	<u>\$</u>
<b>Operating Costs</b>				
5. Fuel cost	<u>= Line E x Line F x Line D x (1 - Line K)</u>	<u>\$ 6,360</u>		
6. Lubrication	<u>= Line 5 x 15%</u>	<u>\$ 954</u>		
7. Repairs	<u>= Line A x Line H</u>	<u>\$ 4,200</u>	<u>\$ 3,090</u>	<u>\$</u>
8. Labor	<u>= Line D x Line G</u>	<u>\$ 0</u>		
9. Total annual operating costs	<u>= Line 5 + Line 6 + Line 7 + Line 8</u>	<u>\$11,514</u>	<u>\$ 3,090</u>	<u>\$</u>
10. Total annual operating costs per hour	<u>= Line 9 ÷ Line D</u>	<u>\$28.79</u>	<u>\$36.35</u>	<u>\$</u>
<b>Total Cost</b>				
1. Total annual costs	<u>= Line 3 + Line 9</u>	<u>\$27,617</u>	<u>\$15,654</u>	<u>\$</u>
2. Total cost per hour	<u>= Line 4 + Line 10</u>	<u>\$69.04</u>	<u>\$184.17</u>	<u>\$</u>

See online Machinery Cost Calculator at [www.agric.gov.ab.ca/machcost](http://www.agric.gov.ab.ca/machcost)

## Machinery Cost Summary

270 HP 4WD Tractor	400	—	—	—	—	69.04		
40' Air Drill	150	42	5	60%	15.3	184.17	253.21	16.55
70' Harrow Packers	40	70	6.5	80%	44	89.57	158.61	3.60
30' Disc	150	30	5	90%	16.5	50.29	119.33	7.23
800 Gallon Sprayer	50	80	7	70%	47	80.10	149.14	3.17
SP Combine 60" conv cylinder	150	20	5	70%	8.5		245.17	28.84
SP Sunther	150	20	4	75%	10		121.08	12.11

# Worksheet Formulas

## N Real Discount Rate

$$= \left[ \left( \frac{(1 + I + J)}{1 + L} \right)^{-1} \right] \quad x (1 - K) = \left[ \left( \frac{(1 + \underline{\quad} + \underline{\quad})}{1 + \underline{\quad}} \right)^{-1} \right] \quad x (1 - \underline{\quad})$$

I = Interest rate

J = Risk premium

K = Marginal tax rate

L = Rate of inflation

= \_\_\_\_\_

## O Real Discount Factor - Power unit or self-propelled machine

$$= \frac{1}{(1 + N)^B} \quad = \frac{1}{(1 + \underline{\quad})^{\underline{B}}} \quad = \underline{\quad}$$

Implement 1  $= \frac{1}{(1 + \underline{\quad})^{\underline{B}}} \quad = \underline{\quad}$

Implement 2  $= \frac{1}{(1 + \underline{\quad})^{\underline{B}}} \quad = \underline{\quad}$

B = Planning period

N = Real discount rate

## P CCA Adjustment Factor - Power unit or self-propelled machine

$$= 1 - \left( \frac{M \times K}{M + N} \right) \quad = 1 - \left( \frac{\underline{\quad} \times \underline{\quad}}{\underline{\quad} + \underline{\quad}} \right) \quad = \underline{\quad}$$

Implement 1  $= 1 - \left( \frac{\underline{\quad} \times \underline{\quad}}{\underline{\quad} + \underline{\quad}} \right) \quad = \underline{\quad}$

Implement 2  $= 1 - \left( \frac{\underline{\quad} \times \underline{\quad}}{\underline{\quad} + \underline{\quad}} \right) \quad = \underline{\quad}$

K = Marginal tax rate

M = CCA class rate

N = Real discount rate

## Q Capital Recovery Factor

$$= \frac{N}{(1 - O)} \quad = \frac{\underline{\quad}}{(1 - \underline{\quad})} \quad = \underline{\quad}$$

Implement 1  $= \frac{\underline{\quad}}{(1 - \underline{\quad})} \quad = \underline{\quad}$

Implement 2  $= \frac{\underline{\quad}}{(1 - \underline{\quad})} \quad = \underline{\quad}$

N = Real discount rate

O = Real discount factor

# Machinery Cost Worksheet

## Field Operation

	Power Unit or self- propelled unit	Implement 1	Implement 2	Total
<b>Machine descriptions:</b>				
<b>Data &amp; assumptions</b>		\$	\$	\$
A New price				
B Planning period (years)				
C Used price		\$	\$	\$
D Annual hours of use (total use all operations)				
E Fuel usage (litres per hour)		hrs	hrs	hrs
F Fuel cost (\$ per litre)				
G Labor cost (\$ per hour)		\$		
H Annual repair rate (% of new price)		%	%	%
I Interest rate (risk free)				
J Risk premium				
K Marginal tax rate				
L Rate of inflation				
M CCA class rate		%	%	%
<b>Formula results</b>				
N Real discount rate				
O Real discount factor				
P CCA adjustment factor				
Q Capital recovery factor				
<b>Ownership Costs</b>				
1. Capital recovery (\$ per year)				
= [(Line A x Line P) - (Line C x Line P x Line O)] x Line Q	\$	\$	\$	\$
2. Insurance and housing (\$ per year)	= Line A x 1%	\$	\$	\$
3. Total annual ownership costs	= Line 1 + Line 2	\$	\$	\$
4. Total ownership costs per hour	= Line 3 ÷ Line D	\$	\$	\$
<b>Operating Costs</b>				
5. Fuel cost	= Line E x Line F x Line D x (1 - Line K)	\$		
6. Lubrication	= Line 5 x 15%	\$		
7. Repairs	= Line A x Line H	\$		
8. Labor	= Line D x Line G	\$		
9. Total annual operating costs	= Line 5 + Line 6 + Line 7 + Line 8	\$	\$	\$
10. Total annual operating costs per hour	= Line 9 ÷ Line D	\$	\$	\$
<b>Total Cost</b>				
1. Total annual costs	= Line 3 + Line 9	\$	\$	\$
2. Total cost per hour	= Line 4 + Line 10	\$	\$	\$

## Machinery Cost Summary

Machine	Annual Hours	Working Width (ft)	Working speed (mph)	Field Efficiency	Acres per hour	\$ per hour	\$ per hour (power unit & implement)	\$ per acre

# Fuel Consumption for Varying Tractor Horsepower<sup>1</sup>

	Diesel tractors	Gasoline tractors	Diesel tractors	Gasoline tractors
<b>Two wheel drive PTO</b>				
HP				
30 - 39	—	31.5	—	
40 - 49	—	38.3	—	
50 - 59	48.2	47.1	10.5	
60 - 69	56.2	55.2	13.6	
70 - 79	65.5	64.5	16.4	
80 - 89	73.5	74.5	17.7	
90 - 99	84.0	82.0	20.5	
100 - 119	90.3	—	22.7	—
120 - 139	111.6	—	28.2	—
140 - 159	128.9	—	32.3	—
160 - 179	145.8	—	38.6	—
Over 180	148.9	—	39.1	—
<b>Four wheel drive DBHP</b>				
100 - 149	135.0	—	33.2	—
150 - 174	159.4	—	40.3	—
175 - 199	182.8	—	50.0	—
200 - 224	217.4	—	53.0	—
225 - 249	235.5	—	58.0	—
250 - 274	265.0	—	61.4	—
275 - 299	281.3	—	62.6	—
300 - 349*	305.0	—	66.4	—

This data on fuel consumption for different sizes of tractors was calculated from the Nebraska Tractor Tests Reports. The fuel consumption figures are based on "75% of Pull at Maximum Power." These fuel consumption figures are for tractors under normal load in average field conditions. Fuel use per hour will be affected by:

- load factor (75% is assumed in these estimates)
- engine RPM
- gear
- correct engine tuning

While these figures may be a good indication of fuel use per hour for a machine, fuel consumption per acre will be affected by the Field Efficiency related to each operation. Estimation of total fuel consumption should take this factor into account. Some factors that can significantly affect field efficiency include:

- wheel slippage
- tire pressure
- tractor ballast
- depth of and sharpness of implement
- soil type and condition
- amount of turning required
- implement overlap in each pass
- down time to refill seed and fertilizer boxes

<sup>1</sup> This data was summarized from "Nebraska Tractor Test Summary 1972 through 1981," *The Grain Grower*, Page 762 (UGG), April 1982 and from 1980-1981 Agricultural Yearbook, S.S.A.E. May, 1980, pp 537-545.

<sup>2</sup> Average Drawbar Horsepower for all tractors in each range.

<sup>3</sup> Average fuel consumption for all tractors in each range.

# Machinery Costs Assumption Guide

Tractors	13	400	3%	120%	—
Combines	12	150	3%	60%	60 - 80%
Cultivators	15	250	3 - 8%	120%	70 - 90%
Discs	15	150	3%	120%	70 - 90%
Rodweeders	15	100	2%	100%	70 - 90%
Seed drills	15	100	2%	100%	65 - 80%
Harrows, packers	15	40	2%	120%	70 - 90%
Sprayers	15	50	2%	80%	50 - 80%
Stone pickers	15	40	2%	100%	50 - 80%
Swathers	15	100	3%	95%	70 - 85%
Mowers & rakes	15	50	2%	100%	60 - 90%
Mower-conditioner	15	50	2%	100%	60 - 85%
Forage harvester	15	80	3%	80%	50 - 80%
Standard balers	10	80	3%	80%	60 - 85%
Large round balers	12	60	2%	60%	60 - 85%
Grain dryers	12	200	3%	—	—
Loaders	15	40	2%	90%	—

<sup>1</sup> Estimated average number of years until a machine depreciates to 10% of original cash cost.

<sup>2</sup> Estimated average annual farm use.

<sup>3</sup> Estimates are based on average conditions and the indicated annual hours of use. Repair rates may be higher for older machines, more hours of annual use or more difficult working conditions.

<sup>4</sup> Total repairs as a per cent of the original cash cost. Repairs are usually low in the first years before they begin to increase at an increasing rate as the machine wears out. These figures could be viewed as a maximum since they reflect high rates in later years.

<sup>5</sup> Field efficiency is a percentage estimate of the amount of time machinery is actually in use relative to the total time required to complete an operation (refer also to page 39).

## Acres Per Hour

Acres per hour or, "effective field capacity" can be calculated using the following formula:

### Acres per hour (effective field capacity)

$$= \frac{\text{machine width (ft)} \times \text{speed (mph)} \times \text{field efficiency}}{8.25}$$

e.g., A thirty-one foot cultivator travelling at 5 mph operating at 80% field efficiency would have an effective field capacity of:

### Acres per hour

$$= \frac{31 \times 5 \times .80}{8.25} = 15 \text{ ac/hr}$$

## Power Required for Tillage

Machine	(H.P./Ft. width)		H.P. P.T.O.	
	H.P. Drawbar 2" (5 mph)	H.P. Drawbar 5"	Light (6.2 mph)	Heavy (5 mph)
Chisel Plow	1.5	3.4	5.0	6.0
Field Cult	.7	1.8 (4")	3.4	5.0
Tandem Disc	1.6	5.0	5.1	7.5
Blade Cult	2.6	4.5	4.8 (5 mph)	—



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